

AN INVESTIGATION INTO THE FACILITATIVE EFFECTS  
OF TWO KINDS OF ADJUNCT QUESTIONS ON THE LEARNING AND  
REMEMBERING OF TEACHERS' COLLEGE STUDENTS DURING THE  
READING OF TEXTUAL MATERIALS WITH AN ASSOCIATED STUDY  
OF STUDENT READING IMPROVEMENT INCORPORATING A SURVEY  
OF THEIR TEXTBOOK READING HABITS, ATTITUDES  
AND PROBLEMS

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by

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## CHAPTER I

### THE PROBLEM

One of the problems met by teachers' college and university students in pursuing their courses of study is the amount of independent reading they are required to complete, when compared with the demands which were made by their secondary school programmes. Kingston recognised the problem of the amount of reading that had to be done at college level when he observed that

Generally, one of the most significant hurdles faced by the typical college student is the problem of dealing with an increased volume of reading. (1967, p.71)

However not only does the student have to deal with a rapid increase in assigned reading, but all too frequently as Kingston suggests his problem is compounded by

professors who blithely assume that he can read the assignments without assistance (and who follow) the widespread practice of assigning chapters or numbers of pages to be read. (1967, p.71)

In discussing the crucial role of written materials and student reading skills in learning, Gagne highlights the two basic problems to be invest-

igated in this study as well as giving direction for research into the instructional process when he states:

. . . the book can impart a great deal of instruction in a relatively short time, when used by a suitably prepared student who can read. The potentialities of printed texts for instruction are very high, and it is doubtful that they have been well exploited as yet. (1965, p.277)

This investigation attempts to determine a simple but effective method which will ensure not only that students begin to study their assigned reading, but that they complete their task and through their purposeful interaction with their textual material achieve desired learning outcomes. Rothkopf places the problem in its proper perspective when he asks these pertinent questions:

Consider how students learn from written material. What determines which capabilities a student has acquired after exposure to an instructional document? The content of the instructional material is undoubtedly important. So is to a lesser degree, it's organisation. But most important, to an overwhelming degree, is what the student does with (author's emphasis) the instructional document. In a sense the student has complete veto power over learning, since without some activity on his part the instructional objectives can never be achieved. (1970, p.326)

The origin of the problem of discovering a method of ensuring that students effectively interact with and complete assigned reading lay with the extension of the period of training in New Zealand for prospective primary school teachers from two to three years. New courses were developed in all subject areas at the Christchurch Teachers' College to meet the needs of this extended period of training. These courses brought with them a rapid increase in the number of textbooks to be used by the students for their study in the various subject areas. The college timetable was "exploded" so that instead of attending lectures on a continuous basis for five hours every day, the student was given non-scheduled periods during the day for primarily the purpose of personal study. His lecture hour commitment was reduced from twenty per week to nineteen per week during his first year at college, eighteen during his second year, and twelve during his third year. The extended use of more formal, terminal examination procedures for assessment purposes was also a notable feature of the new courses in each subject area. The yearly programme was divided

into two semesters instead of three terms, and the number of subjects studied by each student at any one time, was reduced by approximately fifty per cent.

These considerable changes in courses, textbooks, the timetable, lecture hour commitment, assessment procedures and student subject load, brought with them a dramatic shift in the orientation of the institution. Whereas in the past the college could have been seen to be no more than an extension of the high school, it could now be considered to have "come of age". One of the major aims of those responsible for these changes was to make provision for the development of an intellectual climate so aptly outlined by Shaw:

An entering college Freshman at once is aware of greater freedom than he enjoyed in high school. He is given assignments without being told what to look for. His homework is not checked regularly. Course syllabi are without limiting specifications; sometimes teachers mention titles of books that he may or may not read or consult. In the classroom, he takes notes when and how he wants to, and outside of class he reads and studies as he chooses. Never before has his personal development depended on skills and attitudes operating in so continuously permissive a setting. With his new freedom, the college Freshman is confronted with new responsibilities for self direction and self-discipline in working toward his academic goals. (1961, p.336)



The specific reason for this study lay with the growing realisation that these "new responsibilities" did not appear to be fully or even partially accepted by many students. It was through experience gained at the teachers' college on teaching courses in the field of reading and through assessing student progress through periodic tests and assignments, and terminal examinations in these courses during 1967 and 1968 that this investigation was led to reach certain conclusions concerning college students' study techniques, abilities and attitudes. It became apparent from the quality of various aspects of their assignments and their examination papers that they were almost entirely dependent upon the information and understanding they obtained from lectures. Broadly speaking it appeared that they were either not doing their required textbook reading or that they could not read the assigned material effectively.

From an inspection of approximately five hundred student course folders of notes it was found for example that only ten percent of the students took notes from their required reading unless directed specifically to do so. An assignment given at the commencement of each course to read and summarise a particular chapter

of their text for study purposes, demonstrated that only five per cent used the outlining techniques of tabulation and indentation effectively, although approximately another seven per cent attempted to use them. The remainder preferred to employ precis or paraphrase procedures, neither of which was really suitable for the type of material being studied nor for the purposes of the assignment.

In response to a question asking them why they did not use the technique of outlining, fifty per cent of a course of 78 students reported that they had never been taught these skills; seventeen per cent reported that they had been taught them but did not think to use them; seven per cent acknowledged that they knew how to use them but did not like using them; five per cent said that they found these techniques difficult to use; and sixteen per cent felt that paraphrase and precis techniques were more useful. Jolly has this to say concerning the importance of outlining as a study skill.

To be able to outline, the student must be able to identify main ideas and supporting details and arrange them in a form that indicates their relative importance and relationships. Outlining and summarising are invaluable aids for study and retention. (1967, p.182)

From the experience gained with assignment work of first and second year students at the Christchurch Teachers' College it would appear that in general they neither see the need to use these important study skills, nor know how to use them.

Since 1965 this investigator has had responsibility for the administration of a reading achievement test to each yearly intake of students and for the processing of the results. The Co-operative Reading Comprehension Test, Form Y, has been used and this test provides four scores; vocabulary, speed of comprehension, level of comprehension, and a total reading score, which is obtained from an average of the other three scores. From an examination of the scores obtained by students over a period of five years it would seem that approximately twenty per cent of the college intake achieve at or below a scaled score of fifty which, according to Clark (1958, p.7) represents the score which the average white American student would make at the end of the twelfth grade. From discussions held with students concerning their reading abilities, from individual remedial work conducted with students, from the results of the reading achievement tests, and from the results of questionnaires administered during 1969 and reported in this study, it was apparent

that some form of reading improvement work was urgently needed. Boyd, in her study aimed at determining what reading skills should be taught at the sixth-form level was of the opinion that:

To ensure continuous growth towards more skilful, more purposeful reading . . . . reading instruction cannot be confined to the primary school years. It is as the average and above average readers progress through secondary school that they require guidance in mastering the skills that lead to more effective reading. (1966, p.14)

The experiences of the investigator undertaking this current study would lead him to believe that observations apply equally well to those students entering our tertiary level colleges.

The Committee on Reading of the National Society for the Study of Education pointed out for example

that satisfactory growth in and through reading occurs, as a rule, only when appropriate stimulation and guidance are provided in all school and college subjects that require reading. (1948, p.3)

Even if it were possible to organise a special reading improvement programme around a single work text for all students outside their normal lecture hours, there is among some authorities a degree of skepticism concerning the optimistic reports on the

success of this type of approach to the problem. Barbe for example reports rather cynically that he did not find a single report in the literature on a plan that failed. (1957, p.17) The majority of these programmes as McDonald and Byrne suggest

seem to be predicated on the implicit attitude of 'there they are - give them the skills you know they need'. (1958, p.48)

These programmes have also been attacked by Carter (1959) on the grounds that they seek an accumulation rather than an integration of skills, and investigators report that considerable "wastage" of gains made during these courses occurs once the student stops attending.

Since one of the major aims of any attempt to improve college students reading abilities must be to improve their ability to read their college texts more effectively, it seem logical that the materials to use to attempt to attain this goal were the students' own texts. Burton reinforces this view when he observes that:

Our chief emphasis should probably continue to be on facilitating the development of essential study abilities through everyday class work. (1962, p.305)

It seemed then to be doubly important, that since this investigator was teaching a course aimed at producing not only effective readers but effective teachers of reading, Anderson's recommendations are particularly relevant when he suggests:

One of the effective means of building good reading habits among prospective teachers is to set good examples in teacher-training curriculums. Furthermore, prospective teachers who have taken courses in which reading is appropriately used and directed are likely to require through precept effective techniques which they may employ later in their own teaching. (1948, p.289)

The critical factor appeared to lie in the manner in which the students were guided or directed in their reading, causing them to interact more effectively with the material that they were required to read.

As Bruner suggests reading must be

rescued from its passivity and turned into a more active enterprise. (1966, p.103)

It has always seemed rather illogical that teachers, who use textbooks as integral parts of their courses as sources for important generalizations and understandings do not attempt to give their students specific guidance or direction in at least discovering these generalizations and understandings in their texts.

Herber, who in his recent book examines this problem at considerable length, states that

If we accept the thesis that the essence of good teaching is showing students how to do what they are required to do then . . . students must be guided as they read . . . The crucial factor is how one guides his students in the use of materials required in the course. (1970, pp.24-25)

Frase and Silbiger state this in behavioural terms when they observe that

Ability to control text learning requires specifying what behaviours will be the joint outcome of a particular text and a particular problem. (1970, p.560)

If the suggestions made by Burton, Anderson, Herber and Frase were to be met it seemed obvious that the reading course had to become a good model of sound reading practice, so that other courses could use the procedures employed.

During 1969, the Reading Syllabus Study course was presented using a course outline which incorporated the extensive use of adjunct questions and directions to guide students' assigned reading. Written answers to these questions and directions were required. This type of assignment was referred to as "directed reading".

An investigation was commenced in an attempt to obtain more objective evidence as to the effects during

a course of study of providing continuous guidance for assigned reading on student achievement.

Student achievement on a "directed reading" course would be compared with student achievement on a similar course not incorporating directed reading techniques for guiding assigned reading. Due to a number of variables which could not ultimately be controlled this investigation was not completed.

However the experience gained in presenting the same course both with and without directed reading, reinforced this investigator's opinion as to the significantly facilitative effects of this particular technique on student achievement during a course of study requiring extensive reading. This opinion was supported by the views expressed by other lecturers involved in the presentation of the course.

The purposes for this investigation emerge from this investigator's experience in presenting courses at a teachers' college using directed reading techniques for guiding student reading, from his knowledge of the range of student reading, study skills, habits, and attitudes and from his awareness of their need for guidance in their study-type reading. A further purpose for this study arises from criticisms made as



to the limitations of much of the recent research aimed at investigating methods of facilitating learning from textual materials through the use of adjunct questions. These criticisms, made by such people as Pyper (1968), Weintraub (1969), Peeck (1970), and Frase (1970), will be referred to in the chapter in this thesis concerned with the review of the literature.

The aims of the study.

The investigation in the first instance aims at attempting to simulate a normal student reading study task by using course imbedded materials of a much greater length than had previously been employed by other researchers. The experimental section of the investigation has as its specific aims:

1. to compare and determine the facilitative effect on student learning from textual materials of
  - a. adjunct factual questions inserted in post reading positions (hereafter referred to as 'post factual' questions),
  - b. adjunct factual questions inserted in pre reading positions (hereafter referred to as 'pre factual' questions),
  - c. adjunct reasoning questions inserted in post reading positions (hereafter referred to as 'post reasoning' questions),
  - d. adjunct reasoning questions inserted in pre reading positions (hereafter referred to as 'pre reasoning' questions),
  - e. directions to read carefully.

- 17
2. to establish if the regular use of adjunct questions and directions for guiding required reading as an integral part of a course of study in reading promotes improvement in student reading ability.

The survey section of the investigation has as its specific aims:

1. to examine and assess student attitudes towards the use of adjunct questions and directions in guiding their required textbook reading.
2. to obtain information concerning
  - a. reading difficulties experienced by students,
  - b. factors which may have contributed to student reading improvement,
  - c. the amount of their required reading students estimate they do, and
  - d. the habits and attitudes students have towards completing their required reading.
3. to establish some knowledge of the range of problems which students meet in carrying out their required textbook reading.

In the following chapters, an examination of the problem of reading in secondary schools, teachers' colleges and universities (hereafter referred to as 'high school and college') will be found in Chapter II, while Chapter III will deal with the review of the literature. Chapter IV outlines the various aspects of the research design. Chapter V will present an analysis of results for the experimental sections and the survey of the investigation. The discussion, conclusions, implications, limitations and suggestions for further research for the whole investigation will be dealt with in Chapter VI.

## BIBLIOGRAPHY

- Anderson, H.A. (1948), Teacher-education in the field of reading, in The National Society for the Study of Education, Forty-Seventh Yearbook, Part II, Chicago, University of Chicago Press, 1948, pp.276-293.
- Barbe, W.B. (1957), A reading programme that did not work, Journal of Developmental Reading, I, Autumn, 1957, pp.17-21.
- Boyd, R. (1966), The subject teacher's role in a reading improvement programme: with special reference to first year sixth-form groups, Education 7, Vol. 15, August, 1966, pp.14-17.
- Bruner, Jerome S. (1966), Toward a Theory of Instruction, Cambridge, The Belknap Press of Harvard University Press, 1966.
- Burton, W.H. (1962), The Guidance of Learning Activities, 3rd Edit., New York, Appleton-Century-Crofts Inc., 1962.
- Carter, H.L.T. (1959), The role of evaluation in understanding the usefulness of reading, Journal of Developmental Reading, II (Spring, 1959), pp.45-51.
- Clark, M.L. (1958), Interim Manual for Co-operative Reading Comprehension Test, Melbourne, Australian Council for Educational Research, 1958.
- Frase, L.T. (1970), Boundary conditions for mathemagenic behaviours, Review of Educational Research, Vol. 40, No. 3, June, 1970, pp.337-347.
- Frase, L.T. and Silbiger, F. (1970), Some adaptive consequences of searching for information in a text, American Educational Research Journal, Vol.7, No.4, November 1970, pp.553-560.
- Gagne, R.M. (1965), The Conditions of Learning, New York, Holt, Rinehart and Winston, Inc., 1965.

- Herber, H.L. (1970), Teaching Reading in Content Areas, Englewood-Cliff, N.J., Prentice-Hall, Inc., 1970.
- Jolly, H.B. Jnr. (1967), Determining main ideas: a basic study skill, in Hafner, Lawrence E. (Ed.), Improving Reading in Secondary School, New York, The Macmillan Coy, 1967, pp.181-190.
- Kingston, A.J. (1967), Reading demands of college study, in Figurel, J. Allen (Ed.), Vistas in Reading, Newark, International Reading Association, 1967, pp.71-72.
- McDonald, A.S., and Byrne, J.A. (1958), Four questions on objectives, Journal of Developmental Reading, I (Spring 1958) p.48.
- National Society for the Study of Education, Forty-Seventh Yearbook, Part II (1948), Reading in the High School and College, Chicago, University of Chicago Press, 1948, pp.1-7.
- Peeck, J. (1970), Effect of prequestions on delayed retention of prose material, Journal of Educational Psychology, Vol.61, No.3, 1970, pp.241-246.
- Pyper, J.R. (1968) A review of the effects on learning of questions inserted in textual information, A paper presented at the Annual Convention of the National Society for Programmed Instruction, San Antonio, Texas, April, 1968.
- Rothkopf, E.Z. (1970), The concept of mathemagenic activities, Review of Educational Research, Vol.40, No.3, June 1970, pp.325-336.
- Shaw, P. (1961), Reading in college, in The National Society for the Study of Education, The Sixtieth Yearbook, Part I, Development in and Through Reading, Chicago, University of Chicago Press, 1961, pp.336-356.
- Weintraub, S. (1969), The question as an aid in reading, The Reading Teacher, Vol.22, No.8, 1969, pp.752-755.

## CHAPTER II

## READING IN HIGH SCHOOL AND COLLEGE

## Introduction

In this chapter it is proposed to examine the following factors relating to reading in high school and college: the importance of reading in high school and college; the need for continued development in reading; the problem of reading and study disability in high school and college; some possible causes of reading problems occurring in high school and college; the need for guidance in reading in high school and college.

## A. The importance of reading in high school and college.

## 1. Reading and its relation to academic success.

Reading skill and the use of books have long been recognised as critical factors contributing to the continued education and advancement of mankind. Preston in referring to the role played by reading and books in the education of children writes:

Reading has the power to carry the child further and deeper, in a given time unit, than any other educational medium ... The book ... is the most adjustable, personally adaptable, and effective learning medium ever invented ... (1968, pp. 241-2)

In his introduction to the National Society for the Study of Education Yearbook on Adult Reading, Clift points to the need for concern over adult reading habits.

In a world in which the adult is hard put to cope with the ideas that strive for and require his attention, reading remains the single most important form of communication available to him and the most effective tool for his continuing education ... There is good reason to feel, as President

Dodds of Princeton University observed at the National Book Committee's 1955 Conference on American Books Abroad, that, 'books will remain the best visual aids to education'. (1956, p. )

The observations made by both of these writers apply equally well to the importance of reading and books in high school and college. Witty for example, writes:

. . . reading is an aid to learning of great importance in high school and college, and . . . scholastic progress is influenced definitely by the extent and nature of the reading competence of students. (1948, pp.10-11)

In his study of 'Achievement and Adjustment in the First Year at University' Small supports this point of view, when he reports from the results of his investigations:

It can be clearly seen that, in respect of the reading skill measured in this test, the completely successful students were as a group, markedly superior to failing students . . . The disparity in reading ability between the successful and unsuccessful students is quite apparent. (1966, pp.16-18)

Studies by Anderson and Dearborn (1941) and by Traxler and Townsend (1946), led to a spate of investigations, all of which tended to demonstrate that a high correlation existed between ability to read effectively and success attained in high school and college studies. The unequivocal nature of the results of the investigations

in this field were disturbed recently, for the high school level at least, by the finding reported by Anderson. As a result of his extensive investigations into Western Australian high school students' reading abilities and success in examinations for entrance to university he reports that

. . . the most recent evidence available in Western Australia shows little relationship between performance in examinations for university entry and reading ability. This suggests that students can perform quite well in content subjects although their reading scores, in some cases, put them at average grade 7 (equivalent 12 year old) elementary school level. (1970, p.3)

The possible reasons for the absence of any significant relationship between reading and scholastic success in this investigation will be commented on later in this chapter when some reasons for the incidence of reading disability at high school and college are examined. Suffice it to say at this stage that Anderson does not see the absence of a relationship lying with the lack of the power of reading to facilitate learning, since he expresses the same point of view as Preston and Clift on this topic.

In spite of recent developments in other means of communication, reading is still a basic means of information retrieval and there is no reason to suppose that its importance will decline, or that people can afford to be inefficient readers . . . With a continual increase in the available amount of information, the development of

reading efficiency must be central to any educational program, especially at the high school level. (1970, p.2)

2. The need for continued development in reading.

Not only is the student's existing skill in and ability to use reading of considerable importance for his educational progress, the continued development of his skills and abilities in this area is also a critically important factor. Summers emphasises this point when he observes that

The need for continued development of reading as a tool for academic success is crucial. (1967, p.42)

The unbroken nature of reading development is referred to by the Committee on Reading for the National Society for the Study of Education Yearbook on 'Reading in High School and College'.

Studies of the school progress of youth show conclusively that development in the ability to read is continuous throughout elementary, high school and college years. (1948, p.3)

3. New Zealand studies in reading at high school and college.

However, despite the obvious importance of reading



at the high school and college level, an examination of the literature in New Zealand reporting studies in this area of the curriculum at these levels of education reveals a paucity of relevant investigations. Boyd made the following observation concerning this fact:

A survey of reading research in New Zealand is unfortunately very brief and, if the study is centred on the average reader in the secondary school or adult world, the investigation becomes bewildered by the sheer lack of material. (1965) p.10.)

She reports that the first research conducted in this country to deal with the reading problems of secondary school children, was that completed in 1951 by D.P. Caird. Apart from Boyd's study conducted with metropolitan sixth formers concerning reading rate and effective comprehension, and O'Sullivan's (1966) investigations into the reading skills of third form pupils carried out in an Auckland secondary school, the field remains virtually unexplored, as far as studies in depth are concerned.

At the college level the situation is even worse. Apart from the investigation conducted by Small, already referred to, there appear to have been no other reported studies in the field of reading at this level. And yet in their review of pertinent research at the college

and adult level in the United States, Jungeblut and Traxler reported the following finding:

From 1930 through May of 1963, we found roughly eight hundred citations of published studies which involved college students or adults in some phase of research on reading. The tendency which we noted for the volume of published research to increase with each decade since 1930 is in line with the findings of Fulker. (1964, p.115)

In the remainder of this chapter therefore, it will be necessary to refer almost exclusively to the overseas literature and research findings to examine the problems of reading in high school and college and the possible reasons for the occurrence of these.

#### B. The problem of reading and study disability at high school and college.

Reading at the high school and college level has long been recognised as a serious problem. Strang summarised the areas of concern as far back as 1938. Marksheffel, in his examination of the degree of reading readiness on the part of students at these levels of education, expressed the view that

High school and college professors are becoming alarmed at the 'poor' reading skills of some of their otherwise capable students. (1961, p.245)

McDonald (1961, p.254) accepts without question that reading disability exists at this level, and Ketcham in his investigation into the reading ability of high school students attending a university high school who had an average Wechsler-Bellvue I.Q. score of 119 concluded that

The picture of reading ability among high school students turns out to be very similar to the picture of reading ability among elementary school pupils. On this basis the reading-related problems of teachers at the secondary level do not appear to be different from those teachers at the elementary level.

As a result of his study Ketcham is of the opinion that irrespective of the general level of intelligence and reading ability in a given high school, the range of reading ability levels in each grade is at least eight and may run as high as thirteen. (1959, pp.247-249)

In 1959, Carter reported a study he conducted with 1029 students who were completing their first year at College. Of these students 68 per cent reported that they had never been taught how to read a chapter effectively; seventy per cent indicated that they had not been taught how to concentrate upon a reading activity; seventy per cent had not been taught how to critically evaluate a writers' bias and use of preconceived ideas.

From the results of an extensive investigation into students' reading and study deficiencies conducted at De Paul University in the United States over a period of eight years, Halfter and Douglas (1958) reached some important conclusions. They reported that two-thirds of their entering Freshmen lacked the reading skills required for academic success. They found that the chief reading difficulties experienced by college students lay not in the basic skills of word recognition and comprehension, but in the thinking skills involved in most reading activities.

Hadley, in a similar extensive study at the college level, estimated from the results of his investigations that

. . . 95 per cent of college students lack adequate study skills . . . (and that) . . . a relatively small percentage have reading speeds and comprehension skills adequate for handling all college assignments. (1959, p.33)

In a paper presented at the 1968 Conference of the Australia and New Zealand Association for the Advancement of Science, Anderson reported that from his experience with college and adult reading improvement courses most university students and adults exhibited the following unsatisfactory reading characteristics:

1. They were word-by-word readers with little phrasing, who tended to regard the word as the unit of reading.
  2. They regarded all words as essential to comprehension, indeed it seemed almost a sin to miss a word . . .
  3. There was little evidence of setting reading purposes prior to commencing the reading task, and where the purposes were set, they were often too general to be of value.
  4. Since the purposes were general or non-existent, the same pattern was used in all reading situations, and there was little evidence of a flexible pattern of skills.
  5. The pattern used was that of a slow, intensive reading, with an effort, usually unsuccessful, to read for long term recall of all information, irrespective of its possible usefulness.
  6. Sub-vocalising was present in most cases, and in the main readers were unaware of their inefficiency.
- (1968, p.12)

It is not difficult then to discover studies which report widespread and serious reading and study disability at the high school and college levels. The Committee on Reading of the National Society for the

Study of Education observed that

Evidence secured during recent years shows clearly that the amount and quality of the personal reading of many high school and college students is very unsatisfactory . . . Of great significance is the fact that a surprisingly large number of high school and college students are seriously deficient in many of the basic aspects of reading . . . they are unable to prepare assignments effectively, and are therefore frustrated in their efforts to do school and college work. (1948, p.3)

And in a more recent publication of the Society, Witty noted that

studies continue to disclose unjustifiedly large numbers of poor readers in the junior and senior high schools. (1961, p.4)

If the problem is as serious as the literature would seem to suggest, the next step should be to search for possible causes.

This investigator accepts and agrees with the almost universally accepted conclusion of multiple causation in the field of reading disability. However the study being reported in this thesis is concerned primarily with examining methods of encouraging and ensuring that students engage in interactive reading as integral parts of their courses of study. To this end an examination will be made of some possible reasons as to why students appear to either neglect

or avoid engaging in this type of reading, while accepting the fact that a proportion of them would be restricted in their efforts because of their reading skill deficiencies.

One of the aims of this current investigation is to survey the reading skill attainments of first year students at teachers' college through the use of a standardised reading achievement test. It is also proposed to use introspective techniques in questionnaire form, to obtain information from students concerning the main difficulties they experience in completing their assigned textbook reading. Michaels (1965) used this type of approach with 186 eleventh grade students, and although Ephron (1953) classified an overtly expressed list of reading deficiencies as "surface patterns" Raygor and Vance (1959) suggested that such self reports may be useful in diagnosing reading disability. Summers in commenting on Michaels' approach to obtaining introspective reports on reading difficulties, expressed the opinion that although questions could be asked concerning the validity of this approach

. . . the pragmatic technique of asking an individual to introspect on his difficulties in an attempt to identify problem areas can be a useful device, particularly

when used in conjunction with other more objective techniques . . . Continued exploration of the use of subjective techniques for identifying reading skills and difficulties should provide an increasing volume for future research. (1965, p.137)

It is proposed to use both subjective and objective data in this current investigation, for the purpose of obtaining information concerning the reading difficulties experienced by first year teachers' college students. An attempt will also be made to identify factors that these students feel may have contributed to any improvement in their reading ability during their first year at college.

- C. Some possible causes of reading problems occurring in high school and college.
  - 1. Some early negative influences on the reading and study skill development of future high school and college students.

Although this chapter has as its main purpose the examination of reading in high school and college, any investigation into possible underlying causative factors which contribute to reading and study skill disabilities and deficiencies appearing



at these levels, should not only look for probable origins to these problems at the high school and college levels of education. It is therefore considered necessary to briefly examine some of the practices in reading and study skill development at the primary and intermediate grade levels, which may contribute to problems occurring in these skill areas at the later stages of education.

A general conclusion reached by writers and researchers in the field of reading is that children are reading as well, if not better than ever before. In examining the charges of some critics who claimed that children today are failing to acquire as effective reading skills as did pupils in the past, Witty records this observation.

The results of . . . inquiries made in various parts of the United States by a variety of approaches generally show that reading instruction is as successful or slightly more so today than previously. (1966, p.3)

However in the field of the social studies for example Gates (1962) reports that recent research indicates that grave reading problems still exist for all except the most able readers.

If an examination is made, for example, of pupil preferences for activities commonly used in social

studies instruction at the primary school level, it is generally found that pupils are unfavourably disposed towards reading activities. Herman (1969) reported the findings of three unpublished studies which showed that reading was generally disliked as an activity in social studies, at least at the elementary school level. He was able to report only one study that found that reading had appeal as a preparation for discussion in social studies for pupils of high, average and low ability.

As a result of observing fifth grade social studies instruction for 65 hours during a six-week unit of study, Herman (1967) found that children were reading for thirteen per cent of the time, less than two per cent of their total time was spent in writing, while listening occupied 77 per cent: listening to the teacher accounting for twelve per cent; listening to pupils 22 per cent; and listening to teacher-pupil conversations, 43 per cent. Herman concluded that

. . . the lopsideness of listening -  
speaking when compared with reading  
and writing seriously needs correction.  
(1969, p.2)

Other unsatisfactory features observed during this investigation were the manner in which the pupils were

directed to their reading and the approach of many of them to their reading task. Herman reports that:

During these observations, it was common to observe a teacher telling his children to read several pages in the social studies textbook and then see him saunter aimlessly around the classroom. What did many of the pupils do while they were supposed to be reading? They read for a few sentences or paragraphs and then gave up. They pretended to be reading until another activity began. (1969, p.5)

Not only then, did the pupils in this investigation spend very little of their time reading, but frequently, the little reading that they did attempt was poorly directed and even more poorly carried out. Herman concluded as a result of visiting classrooms

. . . that teachers of social studies are predominantly not teachers of reading. (1969, p.4)

He sees as a reason for this lack of emphasis on reading activity in the elementary classrooms the 'shocking disregard' by teachers of their own personal reading, as found by Duffy (1967). Herman concludes:

It is probable that teachers will promote little activity in which they seldom participate. (1969, p.2)

## 2. Teaching content reading skills.

It would appear logical to assume that the time to start teaching children how to read effectively in the subject fields, is when they begin to study in these areas. Spache and Spache (1964, p.275) for example are strongly of the opinion that training in content reading skills must receive 'the major emphasis' during the intermediate grades (nine, ten and eleven year olds). It is not enough to be efficient in literary reading and general reading skills common to all reading activities. As Witty points out.

In addition they (the pupils) must acquire a mastery of specialised reading skills needed in each subject. (1948, p.11)

A number of research findings, Bond and Tinker (1957); Preston et al, (1963); and Strang (1966), show that reading and study skills related to a course need not be taught as an appendage to the curriculum. Herber clarifies this point but refers to the results of surveys conducted by Austin and Morrison (1963), and Braam and Roehm (1964) which indicate that this practice is seldom followed.

Skills can be taught simultaneously with course content; content and process need not be separated. Subject-area teachers have been urged to do this for many years; however surveys rarely reveal this kind of

instruction being practised. The gap between what is known and what is practised is most unfortunate. (1970, p.6)

Artley gives direction as to why and how this gap should be narrowed when he states that

. . . the teaching of a particular subject is the teaching of the study of that subject; and that makes inescapable the fact that every teacher is a teacher of reading and study. (1969, p.433)

The situation that prevails in New Zealand primary schools with respect to the use made of books for reading and learning in the content fields, is almost certain to be worse for example than in the United States. In that country, textbooks with teachers' guides for practically all subject fields are almost universally available, from at least the intermediate grades upwards and in some subject areas, e.g. science and social studies, in the primary grades (six, seven and eight year olds). The situation in this respect in New Zealand primary schools is markedly different. Here, the use of textbooks, apart from in the field of mathematics, appears to be almost actively discouraged. The teacher is usually left to his own initiative in discovering and obtaining the relevant reference material in the form of books, for the study of a particular topic in social studies or science for

example. However not only has the New Zealand primary school teacher to select the books (usually from meager resources) for the appropriateness of their content, but he has to calculate or estimate the level of difficulty ("gradedness") of the material, and to know each book sufficiently well so that he may effectively guide his pupils in their reading of the relevant sections. It would be difficult to devise a more demanding preparatory task in the field of reading than that just outlined, apart from perhaps teaching a severely retarded pupil to read.

3. Some negative influences on reading and study skill development at high school and college: The use that is made of textbooks at high school.

The provision of textbooks as aids for study in the subject fields does not necessarily ensure that they will be well used for the purpose of extending, through reading, the pupil's depth of knowledge, understanding and interests in any particular subject area. In discussing the point that the development of language skills (including reading) is universally accepted as an ongoing process. Anderson claims with justification, that any effective educational programme will continue

this development according to the maturity of the pupils and the communication needs of any given educational level. However he points to a tradition characteristic of the Australian educational scene which appears to prevent this important principle being practised. The position appears to be somewhat similar in New Zealand secondary schools. Anderson claims that

Unfortunately, we are still hampered by an educational philosophy which regards the development of communication skills as the function of the primary school, and reserves the secondary school for the achievement of cognitive goals. Many high schools do not have a developmental programme in communication skills as a basic part of their syllabus, with the result that pupils improve these skills by trial and error, maturation, chance, or not at all. (1968, p.2)

In a later paper he referred specifically to the position of reading instruction in Australian high schools. He listed and developed arguments based on his research findings, which elaborated six main factors which he saw as inhibiting reading improvement in high schools. These were:

. . . educational practices which are teacher centered, teachers who are poor readers, lack of developmental programs beyond elementary school, reluctance on the part of all high school teachers to accept responsibility for developing communication skills, inadequate reading resources, and school organisation which gives too little free time to pupils. (1970, p.1)

Anderson points to the 'curious dilemma' in Australian education where the traditional emphasis on teacher-centered education has meant that a high level of reading achievement has not been necessary for educational achievement. He reminds us

. . . that reading is a skill used by learners, and if a pupil is taught rather than encouraged to learn, then the reading skills he requires are minimal and not much beyond word recognition. (1970, p.3)

Reference has already been made to the lack of a significant relationship between reading achievement and scholastic success found by Anderson with Western Australian high school pupils. From the results of his investigations he is forced to reach a conclusion that appears to apply equally to the New Zealand situation.

Unless educational practice requires a high degree of reading efficiency, it seems unlikely that pupils will be required to develop skills beyond those acquired in the elementary school and their dependence on teachers as primary information sources will be continued. (1970, p.1)

4. Some negative influences on reading and study skill development at high school and college: Practices followed in assigning reading tasks.

A further possible 'teacher-centered' cause of the incidence of reading and study disability at the



high school and college levels may well lie in the unsatisfactory nature of the procedures used by teachers for assigning tasks which require intensive and extensive reading by their pupils. Over two decades ago, Burton was strongly critical of the prevailing practices in high schools with respect to directing students reading. He writes:

The meager, vague, unanalysed, wholly inadequate type of assignment predominates in the secondary school, practically to the exclusion of all other forms. One investigator reports that more than four-fifths of the procedures - in the social studies of all places - involved nothing more than page assignments to a single text book! . . . Despite fifty years of attack by competent critics armed with unlimited valid evidence there persists the wholly unexplained assignment aimed at "covering the text". (1950, p.277)

Burton goes on to conclude with some force that

It would be difficult to devise an educational practice so grossly ineffective, so certainly calculated to interfere with learning, as a page assignment to a single text followed by a formal verbal quiz. Yet this is the practice used by the great majority of secondary school teachers. (1950, p.277)

In examining methods of improving social studies reading, Preston, et al (1963) criticised high school teachers for assuming that their students already knew how to master their test book assignments without

instruction. They pointed out that this was an 'unsound assumption', and that

The acquisition of reading - for mastery should not be left to chance.  
(1963, p.136)

Herber (1970) also is critical of what he terms 'assumptive teaching' of this type on the part of secondary school and college instructors.

During 1960, Marksheffel questioned over one thousand experienced secondary school teachers from the Western United States, Alaska and Canada on how they assigned reading in their subject-matter fields. His findings reflect the reasons for Burton's scathing criticisms of prevailing practices a decade earlier.

Marksheffel reports on his teachers' replies:

With few exceptions they replied that they wrote the assignment on the board or told the students to "take the next Chapter or to read pages 317-399 for tomorrow and be ready to answer questions". A few teachers used duplicated sheets of questions which the student was to answer or had the students answer the author's question at the end of the chapter. A "mere handful" of teachers followed a method that could be termed sound and conducive to learning. (1961, p.270)

The practices which Burton complained so bitterly about over a decade previously were obviously still the standard procedure followed by the majority of secondary school teachers in 1960 in Canada and the United States.

The investigator reporting this current research, recently asked twentytwo New Zealand university, arts and science graduates if, during the course of their studies for their various degree units, they had received any guidance in the form of study guides incorporating the use of questions and directions, for their assigned textbook reading. Only one student was able to report that she had received guidance of this nature and this had occurred in one subject area. No student could recall receiving any other kind of assistance aimed at guiding their required reading.

#### 5. Summary.

In summary then it would appear that there is the serious problem of the extent of reading and study disability existing at the high school and college levels. There is evidence to suggest however in Australia, that at the high school level at least the problem may well be largely unrecognised due to the "teacher dominated methodologies" referred to by Anderson. There is also strong evidence to suggest that the almost universal and entirely unsatisfactory nature of the "unfocalised" reading required of high school and college students by their teachers does little to assist these students to

complete their assigned reading effectively. Indeed, as writers such as Burton, Herber and Preston have suggested, these assumptive practices contribute little to the students reading development, and may well in fact hinder it.

In 1948, the Committee on Reading for the National Society for the Study of Education stated with reference to the reading required of high school and college students:

The need is urgent on the part of many students for guidance which will aid them in acquiring greater competence in reading, in adjusting to the varied reading demands made upon them, and in securing essential types of understanding and interpretation. (1948, p.2)

It would appear that the same plea could still be made today.

D. The need for guidance in reading at high school and college.

The need to provide students with direction and guidance for their assigned reading is not a new idea.

Herman comments that

As far back as 1929 Washburne pointed out that question guided reading was superior to the generalised page assignment . . . (1969, p.4)

Surprisingly little notice seems to have been taken of Washburne's findings, important though they were for classroom practice.

However reading authorities over the years have constantly made explicit, hortatory requests for teachers to provide their students with more direction and guidance for their assigned reading. Gray recommended that teachers should assist students to acquire strong motives for all their reading so that

. . . the demand for meaning becomes permanently associated with the reading act. (1948, p.96)

This is particularly important at the high school and college levels as it is here that growth is most rapid in the more mature types of critical, interpretative and interactive reading.

The complaint that subject-teachers usually make in response to the suggestion that they should be 'teachers of reading' is referred to by Austin and Morrison.

(Teachers) reportedly do not have sufficient time to 'teach everything' and, unaware that a dichotomy need not exist, feel it more important to cover the content than to teach the reading skills in the content areas. (1963, p.50)

Reference has already been made of the need for teachers to adopt a 'reading to learn' attitude to the teaching of reading at all levels of education.

In answering his own question as to whether teachers can enhance or accelerate their students' growth in interpreting what they read by trying to direct it, McCallister claims that

They undoubtedly can, and the most effective means is by the purposeful guidance of reading activities.  
(1966, p.93)

Smith (1966, 1967), Robinson (1968) and Boyd (1965), have all conducted studies aimed at investigating the effects of setting purposes for students' assigned reading.

Smith (1966) was concerned with the ability of students to identify appropriate reading purposes from the nature of the content of the reading material, to comprehend the material, and to make necessary reading adjustments in the light of the purposes for reading. She worked with 511 ninth grade, American, suburban pupils from which she obtained two matched groups (an experimental and a control) each numbering 62 pupils. Over a period of a year the experimental students were given instruction on purposeful reading through the work conducted in their regular, English classes, while the children in the control classes received no specific instruction in this aspect of reading.

As a result of this instruction given to the experimental group, Smith was able to report that these students were better able to identify appropriate purposes for reading, to read significantly better for the purposes studied and that they demonstrated an ability to comprehend on a higher level than could the students in the control classes. Artley in reporting Smith's findings observed that, on the basis of the evidence she obtained, she was able to conclude

that well-planned assignments should be made in which students are given reading purposes or are given direct instruction and guidance in setting their own purposes. Moreover, she recommended that instruction in purposeful reading should be given below and above the grade in which the study was carried out. (1969, p.428)

Some writers such as Harris (1948, p.126) and Stauffer (1969, p.25) have stressed the need for pupils to set their own purposes as a means of improving the quality of their interactive reading. And although Spache also believes that pupils who are able to set strong purposes tend to comprehend significantly better than those who set vague purposes, he claims that

This relationship is present whether the student or the teacher clarifies the purpose for the reading. (1964, p.467)

An interesting and comprehensive case-study approach to examining through interview and retrospection, the responses of fifteen good reader subjects and fifteen poor reader subjects to being asked to read for different purposes was conducted by Smith. Her recommendations resulting from this investigation have implications for teachers as well as curriculum and test makers, at all levels of education. However, Smith was of the opinion that

Appropriate learning experiences to increase competency in reading for different purposes and adequate evaluation instruments concerned with purposeful reading can be developed only if the processes involved in reading for different purposes are understood. (1967, pp.82-83)

Although her research was conducted with high school students her recommendations are applicable at the college and the primary and intermediate school levels.

First, teachers and curriculum-makers should investigate their curricula to determine if learning experiences to develop purposeful reading are provided. The subjects in this investigation in their twelve years in school had not been taught how to read for different purposes sufficiently well that they could remember or describe such instruction.

The conclusion reached by Herman and Anderson reported earlier in this chapter tend to demonstrate the kinds of practices which restrict the provision of these



kinds of learning experiences. Boyd (1965) in a study involving 279 sixth formers in a Dunedin metropolitan school reported that for these pupils, reading for set purposes was a new idea.

Smith's second recommendation is that

. . . instruction in purposeful reading should continue throughout high school so that students can become proficient in reading materials of increasing difficulty for different purposes. Good readers in this study attempted to adjust their procedures in harmony with their purpose . . . Poor readers without instruction had not learned on their own to make judgments in harmony with their purposes as good readers had.

Henderson (1965) also found that pupils differ in the skill with which they formulate a reading purpose and that this difference is positively related to reading achievement. Boyd reported

. . . that the average readers in the sample revealed little indication of a flexible approach to reading even though the set purposes for reading varied from reading for details . . . to grasp the main facts . . . to skimming . . . to gain a general impression of the writers attitude. (1966, pp.15-16)

Writers such as Austin and Morrison, Anderson, Spache and Artley, already referred to in this chapter and others such as Catterson (1965), Early (1964), Fay (1953), Herber (1965) and Karlin (1965), all point to the need

for the continuation of course imbedded reading instruction at the high school level. Contributors to the National Society for the Study of Education Forty-Seventh Yearbook also referred constantly to the same need for college students and Shaw writing in the Society's sixtieth Yearbook asserted that

. . . the proper teachers to train college students to develop their reading ability are instructors of lower Freshmen. (1961, p.344)

He went on to list seven important reading practices which these instructors should follow during their normal day-to-day teaching.

Smith's third recommendation is particularly relevant to the complaints of Burton, Herber, Preston and Marksheffel already referred to earlier in this chapter. Smith concludes that

. . . this study points to the need for well-planned assignments in which students are either told the purpose for the reading or given direct instruction and guidance in setting their own purposes.

Her study demonstrated, as did Marksheffel's survey, that teachers at the high school level did not usually follow this practice. Spache in discussing the importance of the teacher clarifying study objectives for a reading assignment stated that

If the instructor has not a particular purpose in mind, it is doubtful whether the assignment is justifiable. (1963, p.77)

The fourth conclusion that Smith reached as a result of her study, will be examined in some detail in the next chapter of this thesis. Her finding that teachers ask a preponderance of factual or detail oriented questions is consistent with that of other researchers in this field. She recommends that

. . . teachers should ask a wide variety of questions requiring different kinds of responses. This study showed that the teachers' questions and examinations are important determinants of the manner in which students read. (1967, p.82)

The results of Smith's investigation have been reported in some detail here, since from the basis of well-designed, empirical research, they appear to provide logical, practical and relatively simple answers to the more important reading problems that have probably always been present to a greater or lesser extent in our high schools and colleges. In her conclusions she summarises effectively the reading practices that reading authorities for many years have been recommending teachers to follow, particularly at the upper primary, high school and college levels of education.

One of the aims of the investigation being reported

in this thesis is to attempt to determine if the regular use of adjunct questions and directions of various kinds for assigned reading contribute significantly to student reading improvement. It is predicted that all students will improve their reading performance over a period of ten months but it is hypothesized:

that students who take the Reading Syllabus Study course during their first year at Teachers' College, will make significantly greater gains in their reading performance over a period of ten months, when compared with those students who do not take that course.

This hypothesized significant improvement, it is realized, may be effected also by the variable of student knowledge of reading per se, as a result of studying reading as a subject.

In the next chapter the literature will be reviewed in the broad field of studies aimed at facilitating learning from textual materials with particular reference to the use of adjunct pre and post reading questions.

## BIBLIOGRAPHY

- Anderson, A.W. (1968), Remedial work with university students in the area of communication skills, paper presented at Australian and New Zealand Association for the Advancement of Science Conference, Christchurch, January, 1968.
- (1970), Reading instruction for 12-18 year olds, paper presented at the International Reading Association's World Reading Congress, Sydney, August, 1970.
- Anderson, I.H. and Dearborn, W.F. (1941), Reading ability as related to college achievement, Journal of Psychology, Vol. II, 1941, pp.387-396.
- Artley, A.S. (1967), Effective study - its nature and nurture, in Beery, Althea, et al, Elementary Reading Instruction: Selected Materials, Boston, Allyn and Bacon, 1969, pp.422-433.
- Austin, Mary and Morrison, C. (1963), The First R, Cambridge, Harvard University Press, 1963.
- Bond, G.L. and Tinker, M.A. (1957), Reading Difficulties: Their Diagnosis and Correction, New York, Appleton - Century-Crofts, 1957.
- Boyd, Rachel M. (1965), Rate of comprehension in reading, A study of effective reading among first year sixth form pupils in Dunedin state secondary schools, unpublished thesis submitted to the Department of Education, University of Otago, 1965.
- (1966), The subject teacher's role in a reading improvement programme: with special reference to first year sixth form groups, Education 7, Vol. 15, 1966, pp.14-17.
- Braam, L.S. and Roehm, Marilyn A. (1964), Subject-area teachers' familiarity with reading skills, The Journal of Developmental Reading, Spring, 1964, pp.188-196.

- Burton, W.H. (1950), Implications for organisation of instruction and instructional adjuncts, in the Forty-Ninth Yearbook, Part I, of the National Society for the study of Education, Learning and Instruction, Chicago, University of Chicago Press, 1950, pp.217-255.
- Caird, D.P. (1957), The teaching of reading, unpublished thesis submitted to the Department of Education, Wellington University, 1951.
- Catterson, Jane (1965), Successful study skills programs, in Herber, H.L. (Ed.), Developing Study Skills in Secondary Schools, Perspectives in Reading No.4, Newark, International Reading Association, 1965.
- Carter, H.L.J. (1959), Effective use of textbooks in the reading programme, in the Eighth Yearbook of the National Reading Conference for Colleges and Adults, Fortworth, Texas Christian University Press, 1959.
- Clift, D.H. (1956), Introduction, in the Fifty-fifth Yearbook of the National Society for the Study of Education, Part II, Adult Reading, Chicago, University of Chicago Press, 1956.
- Committee on Reading, (1948) Purpose of the Yearbook, in the Forty-Seventh Yearbook, Part II, of the National Society for the Study of Education, Reading in the High School and College, Chicago, University of Chicago Press, 1948, pp.1-7.
- Early, Margaret J. (Ed.) (1964), Reading Instruction in Secondary Schools, Perspectives in Reading No.2., Newark, International Reading Association, 1964.
- Ephron, Beulah K. (1953), Emotional Difficulties in Reading, New York, Julian Press, 1953.
- Duffey, R.V. (1967), Elementary school teachers' reading, unpublished manuscript, referred to in Preston, R.C. (Ed.), A New Look at Reading in the Social Studies, Newark, International Reading Association, 1969, p.2.
- Fay, L. (1953), How can we develop reading-study skills for the different curriculum areas?, The Reading Teacher, 6, March, 1953, pp.12-18.

- Gates, A.I. (1962), The teaching of reading - objective evidence versus opinion, Phi Delta Kappan, Vol. 43, 1962, pp.197-205.
- Gray, W.S. (1948), Increasing the basic competencies of students, in the Forty-Seventh Yearbook, Part II of the National Society for the Study of Education, Reading in the High School and College, Chicago, University of Chicago Press, 1948, pp.91-115.
- Hadley, L.S. (1957), New college students lack study techniques, School and Society, LXXXV, November 9, 1957.
- Halfter, Irma T. and Douglas, Frances M. (1958), 'Inadequate' college readers, Journal of Developmental Reading, I, Summer, 1958, pp.42-53.
- Harris, T.L. (1948), Making reading an effective instrument of learning in the content fields, in the Forty-Seventh Yearbook, Part II, of the National Society for the Study of Education, Reading in the High School and College, Chicago, University of Chicago Press, 1948, pp.116-135.
- Herber, H.L. (Ed.), (1965), Developing Study Skills in Secondary Schools, Perspectives in Reading No.4, Newark, International Reading Association, 1965.
- Herber, H.L. (1970), Teaching Reading in Content Areas, Englewood Cliffs, Prentice-Hall Inc., 1970.
- Herman, W.L. Jr. (1967), An analysis of the activities and verbal behaviour of selected fifth grade social studies classes, Journal of Educational Research, Vol. 60, 1967, pp.339-345.
- (1969), Reading and other language arts in social studies instruction: persistent problems, in Preston, R.C. (Ed.), A New Look at Reading in the Social Studies, Perspectives in Reading No.12, Newark, International Reading Association, 1969, pp.1-20.

- Jungeblut, Ann and Traxler, A. (1964), Summary and evaluation of pertinent research at college-adult level, in Leedy P.D. (Ed.), et al, College-Adult Reading Instruction, Perspectives in Reading No.1 Newark, International Reading Association, 1964, pp.115-134.
- Karlin, R. (1963), Nature and scope of developmental reading in secondary schools, in Figurel, J.A. (Ed.), Reading as an Intellectual Activity, Proceedings of the International Reading Association, 8, 1963, pp.52-56.
- Ketcham, W.A. (1959), The reading ability of high school students, University of Michigan School of Education Bulletin, Vol. 30, 1959, pp.73-76.
- McCallister, J.M. (1966), Promoting growth in interpreting in grades one through fourteen, in Robinson, H.A. (Ed.), Reading: Seventy-Five Years of Progress, Chicago, University of Chicago Press, 1966.
- McDonald, A.S. (1961), What current research says about poor readers in high school and college, Journal of Developmental Reading, Spring 1961, pp.184-196.
- Marksheffel, N.D. (1961), Reading readiness at the high school and college levels, Education, January 1961, pp.269-272.
- Michaels, M.L. (1965), Subject reading improvement: a neglected teaching responsibility, Journal of Reading, Vol. 9, 1965, pp.16-20.
- O'Sullivan, J.F. (1966), Reading skills in the third form, an investigation of some aspects of reading in an Auckland Secondary School, unpublished thesis submitted to the University of Auckland, 1966.
- Preston, R.C. (1968), Teaching Social Studies in the Elementary School, Third Edit., New York, Holt, Rinehart and Winston, 1968.
- Preston, R.C., Schneyer, J.W. and Thying, F.J. (1963), Building social studies reading in high school students Bulletin No. 34, National Council for the Social Studies, 1963.



- Raygor, A.L. and Vance, F.L. (1959), The diagnosis and treatment of College reading difficulties using patterns of symptomatic statements, Journal of Developmental Reading, Vol. 3, 1959, pp.3-11.
- Robinson, Helen M. (1968), The next decade, in the Sixty-Seventh Yearbook of the National Society for the Study of Education, Part II, Innovation and Change in Reading Instruction, Chicago, University of Chicago Press, 1968, pp.397-430.
- Shaw, P. (1960), Reading in college, in the Sixtieth Yearbook, Part I, of the National Society for the Study of Education, Development in and Through Reading, Chicago, University of Chicago Press, 1961, pp.336-356.
- Small, J.J. (1966), Achievement and Adjustment in the First Year at University, Wellington, New Zealand Council for Educational Research, 1966.
- Smith, Helen K. (1966), Instruction of high school students in reading for different purposes, Cooperative Research Project No.1714, Office of Education, United States Department of Health, Education, and Welfare, 1966.
- (1967), The responses of good and poor readers when asked to read for different purposes, Reading Research Quarterly, Vol. 3, No.1, 1967, pp.53-83.
- Spache, G.D. (1963), Toward Better Reading, Champaign, Garrard, 1963.
- Spache, G.D. and Spache, Evelyn B. (1964), Reading in the Elementary School, Second Edit., Boston, Allyn and Bacon, 1964.
- Strang, Ruth (1938), Problems in the Improvement of Reading in High School and College, Lancaster, Science Press, 1938.
- (1966), Developing reading skills in content areas, The High School Journal, April 1966, pp.301-306.

Stauffer, R. G. (1969), Teaching Reading as a Thinking Process, New York, Harper and Row, 1969.

Summers, E. G. (1967), Reading in the secondary school, Review of Educational Research, Vol. 47, No. 2, 1967, pp. 134-151.

Witty, P. A. (1948), Current role and effectiveness of reading among youth, in the Forty-Seventh Yearbook, Part II, of the National Society for the Study of Education, Reading in High School and College, Chicago, University of Chicago Press, 1948, pp.8-26.

——— (1961), Purpose and scope of the yearbook, in the sixtieth yearbook, Part I, of the National Society for the Study of Education, Development in and Through Reading, Chicago, University of Chicago Press, 1961, pp. 1-16.

### CHAPTER III

#### REVIEW OF THE LITERATURE

##### Introduction

In this chapter it is proposed: to review the related literature by reporting on the broader field of research into methods of facilitating meaningful verbal learning from written materials; to refer particularly to the role of the question as an aid in reading; to examine more closely the studies that have focussed their attention on three factors related to the use of questions and their effects on learning; the position of the question in the passage to be read; the types of question asked; and the frequency with which questions have to be inserted in textual materials in order to have the greatest facilitative effect on learning; to examine some of the effects of overt versus covert responses on learning from written materials; to briefly refer to the problem of reading time in studies of this nature; and to discuss some theoretical interpretations concerning the effects on learning and retention of questions inserted in textual

material and then arrive at the experimental hypothesis for this particular investigation.

A. Facilitating verbal learning from textual materials:  
The general field.

An examination of the literature related to this particular study reveals the growing awareness on the part of researchers, particularly in the United States of the importance of this topic. Frase is critical of the confusion that has developed with the increased knowledge about the instructional process. One of the main reasons for this is the failure on the part of researchers

to isolate problems of general importance and persevere in an attack on them. (1970, p.337)

This has resulted, he further claims, in investigators accumulating a great amount of knowledge on a variety of unimportant topics lacking cohesiveness. However he observes that there is at least one area in this field, where there are signs of change.

It is encouraging to note the emergence of one especially important research topic in the writings of Ausubel (1963), who emphasized the study of meaningful verbal learning; Rothkopf (1965) who made some important conjectures about learning from written materials; and Carroll (1968, p.1), who stressed the

study of learning from being told.  
This emergent topic is the study of  
how people learn from ordinary text.  
(1970, p.337)

The growing body of knowledge in this particular aspect of verbal learning involving the use of textual materials has been added to by the results of studies by Berlyne (1954, 1966), who is continuing to investigate the area of epistemic curiosity, perceptual curiosity and conceptual conflict as these conditions affect student learning from written materials and by Anderson (1970), whose paper contains a comprehensive review of the role of attentional processes in verbal learning and instruction. The concepts of set (Postman and Senders, 1946) or 'sets to learn' (Gibson 1941, and Harlow 1946), orienting reflex (Maltzman and Raskin, 1966) and arousal (Kleinsmith and Kaplan, 1963; Natkin and Stahler, 1968), are all useful and relevant areas of investigation into the field of the instructional process and verbal learning from written materials.

One of the most interesting lines of investigation in the area of facilitating verbal learning from textual materials has been the growing body of research aimed at examining methods of advancing the instructor's control over the nominal and the effective stimuli. The distinction between nominal and effective stimuli in learning has been most clearly stated in recent years by

Underwood (1963), although Rothkopf (1970, p.326) claims that the history of the idea can be traced back to Gustav Fechner (1860). Although the instructor usually has control over the nominal stimulus, i.e. the stimulus object presented by the instructor, it is unfortunately still true to say that he has insufficient control over the effective stimulus, i.e. the educative and psychological consequences of the effects of the stimulation. Rothkopf emphasises this point when he states that

We can only make a very approximate guess as to the specific character of effective stimuli in the instructional situation. This is to a large degree due to the fact that the instructor does not determine effective stimulation. Realistically speaking, he can only see to it that instructionally desirable effective stimuli are a possibility. Whether this possibility is realised depends critically on the actions of the student. (1968, p.115)

This is especially characteristic of the instructional situation we place students in when we direct them to learn through reading. The more effective management of this deceptively simple but pervasive instructional situation is undoubtedly a critical area in which teachers urgently need to extend their knowledge and understanding.

Two of the most recent and interesting approaches to the study of the effects of questions upon the acquisition of information from written materials are the cybernetic and mathemagenic models.

According to Frase

The cybernetic view (Hershberger and Terry, 1965; Smith, 1966; Smith and Smith, 1966) suggests that a question can be used by a student to determine if achieved behaviour (what the student has put into memory) meets the criterion of acceptable behaviour (the correct answer) . . . The assumption is that some instructional event (a question or direct command) must occur either before or during reading, which makes it probable that the learner will respond discriminately (using the appropriate skills) to the printed stimuli. (1968, p.320-321)

The critical factor however according to Frase, that determines the efficiency of learning from textual materials is

what the student does with the words he reads while he is reading them . . . It is this "closed-loop" characteristic of human information processing which has received unique treatment in the cybernetic model. (1968a, p.322)

The mathemagenic model suggested by Rothkopf, appears to be similar to and consistent with the cybernetic approach, although the mathemagenic activities of the learner appear to function more as an "ongoing system" rather than a "closed-loop" system as in the

cybernetic model. The mathemagenic model, according to Frase's description emphasizes

the acquisition and retention of information from printed material can be related to a variety of ongoing responses, summarized by the term "mathemagenic" - they give rise to learning. (1968a, p.323)

Through the use of questions or directions inserted in the reading materials, the students responses can be brought under control. Again, as with the cybernetic model, the critical activity in learning from printed materials concerns what the student does while he is reading (his mathemagenic behaviours), rather than the particular question or direction given.

It must be stressed therefore that the cybernetic and mathemagenic approaches to the management of instruction involving the use of written materials are concerned primarily with, as Frase suggests the

control of the behaviours which facilitate learning rather than the associations to be learned. The basic issue here is the adaptive control of appropriate study habits. (1968a, p.325)

It has been through the investigations into the effects on learning of questions inserted in textual materials that the cybernetic and particularly the mathemagenic models have received increasing attention over recent years.



B. The role of questions as an aid in reading.

Questions have long been recognized as an important means of guiding learning and in assisting the development of thinking abilities. They have been one of the most widely used and potentially effective means of guiding reading behaviour and the teacher has traditionally made extensive use of questions after his pupils have completed their reading of a story or passage. More recently however, the practice has developed of asking questions before the reading activity has commenced, as well as asking them afterwards. Those asked beforehand are usually aimed at establishing purposes for the reading and those asked afterwards are believed to structure the reader's thinking behaviour. It is interesting to note that Washburne (1929, p.358) reported as a result of his investigation into the use of adjunct questions that the worst placement for questions aimed at facilitating learning from prose materials is the grouping of all questions at the end of the story.

Since reaching its height, probably in the days of Socrates, the use of the question in the classroom at least, seems to have gone into steady decline. The

conclusions reached by Guszak for example are typical of a number of similar studies into classroom questioning. He conducted an extensive investigation into the types of questions used by teachers in reading lessons in American elementary school classrooms and the pupils' responses to these questions. He categorized the strategies and sequences of questions and the remarks that teachers commonly employ and he reached the following conclusions:

About the only thing that appears to be programmed into the students is the nearly flawless ability to anticipate the trivial nature of the teachers' literal questions . . . the students have learned well to parrot back an endless recollection of trivia. (1967, p.233)

Austin and Morrison in their survey of the reading practices in the public schools of the United States of America also reported a predominance of factually oriented questions and observed that

It was rare indeed that members of the study staff heard teachers trying to help children . . . develop critical reading skills. (1963, p.40)

And yet, as indicated at the beginning of this section of this review, the important role of questions in learning and thinking has long been recognized. Melnik sees questions serving an important function in both reading and teaching situations. She believes

that in reading, questions establish a basis for identifying and clarifying a reader's purpose. This influences, not only his method of reading, but the level of comprehension he achieves, his rate of reading, and the particular reading skills he employs

More than anything else, a reader's purpose influences what he reads and how he reads. In instructional situations, the role of the question is by far the most influential, single teaching act. (1969, p.252)

Taba, after investigating the role the questions lifted the level of children's thinking, said that:

A focus set by the teachers' questions circumscribes the mental operations which the student can perform, determine what points they can explore, and what modes of thought they can learn. (1964, p.53)

Rothkopf reinforces this view when he reports that

The most intriguing single result from our work is that the character of questioning tends to shape the character of the knowledges which are acquired. (1968, p.127)

One of the more serious educational effects of the use of limited questioning techniques has been demonstrated by Perry. He asked 1500 Harvard and Radcliffe freshmen to read a chapter of a text and warned them beforehand that they would be tested at the conclusion of their reading. He reported that the

typical approach of 90 per cent of these students was to start at the beginning of the chapter and read straight ahead. No attempt was made to survey the chapter, note marginal headings or first read the recapitulation paragraph in which the whole structure and summary of the chapter was given. Thus none of the clues and signals provided as a basis for raising questions were used to identify specific purposes for reading. Their performance on a multiple-choice test on details as far as they were able to read in this manner was impressive. But only one in a hundred to fifteen in all - were able to write a short statement on what the chapter was about. Perry describes the reading performance of 99 per cent of these students 'as a demonstration of obedient purposelessness in reading' (1959, pp.193-200). Melnik concludes that

Even our most able readers reflect a detail-oriented concept of reading which largely results from the types of questions they have encountered in the classroom. (1965, p.253)

And one could add, the types of assessment procedures they encountered. Melnik is of the opinion that as a result of the Harvard study and the various studies of teachers' questions

. . . it seems evident that students and teachers need to improve the quality of their questions. Perhaps in our teaching we need to shift our emphasis from giving the right answers to raising relevant and significant questions. (1969, p.254)

In discussing the problem of stimulating reading in depth, Howards sums up the all important role of the question as he sees it and comments on the possible outcomes of some of the unsatisfactory instructional practices outlines in this section of this review.

In the question lies the beginning of learning, and in the answer should lie further questions - not a dead end. Too much of our education at all levels, is filled with knowing answers which kill curiosity, questioning and true educational experience for students and teacher. (1967, p.76)

The recent interest in investigating methods of facilitating and attempting to control learning from written materials without the direct intervention of the teacher, probably lies with the success achieved in this approach to instruction through the use of programmed materials. For example, Rothkopf's (1963b) interest in this field was first stimulated when he detected the importance of certain learner activities in connection with his analysis of frame formats in programmed instruction. The high frequency of the required student responses and the immediate feedback

of knowledge of results had usually been interpreted by those who have investigated the field of programmed learning as having a direct effect on the acquisition of subject matter knowledge. In a recent paper Rothkopf commented that

Analysis led to a rejection of this interpretation and to the belief that these operations affect the inspection activities of the students instead. The inspection activities then determine what is learned.  
(1970, p.325)

Investigations by Alter and Silverman, (1962), Ausubel, (1963), Glaser and Taber, (1961), Hershberger and Terry, (1965), Bruning, (1968), Frase, (1967), Anderson, (1970), all indicated that the traditional small step approach with immediate knowledge of results which is characteristic of most programmed materials, may not be necessary.

Studies conducted by Pressey and Kinzer (1964), Roderick and Anderson (1968), and Merrill and Stolurow (1966), have demonstrated that college students can learn more effectively and more efficiently from a succinct textbook-style summary of a unit of programmed instruction, and through using questions which serve as a review or preview function, than from the small step, immediate feedback, programmed approach. These conclusions, along with the results of studies conducted by Rothkopf

(1965, 1966), Musgrave and Cohen (1966), and Rothkopf and Bisbicos (1967), led Frase to conclude that

. . . it is possible to improve learning from prose materials by using fairly simple stimulus controls such as questions, (and) the fact that learning from gross instructional materials can be manipulated in a predictable manner suggests that a technology of instruction will soon include an understanding and application of relatively flexible methods of control. (1968)

Although the increasing amount of analysis and research being devoted to learning from ordinary prose or textbook passages may have been stimulated by the development and use of programmed materials, studies of this kind appear to have been conducted over four decades ago. For example Distad in 1927 investigated the effects on reading performance of pupils using different kinds of directions and different kinds of materials. Washburne in 1929 used equivalent groups of junior high school pupils reading social science material to determine the effects of questions on their learning of questions - relevant and question - irrelevant (incidental) facts and generalizations. He also investigated the effects of the placement of questions: one group read the unit with all the questions placed at the beginning, another with the questions interspersed at the beginning of appropriate paragraphs, another with questions interspersed at the end of appropriate para-

graphs, another with all the questions at the end of the unit. His control group had no questions to guide their reading; time was controlled to the extent of allowing sufficient time for all to finish.

Washburne (1929, pp.358-9) found that the inclusion of questions in textual materials resulted in an important and reliable difference in the recall and understanding of the story, that significant differences resulted from the different placement of the questions with the best position for the recall of both question-relevant and incidental information being the pre-reading placement, and the worst placement was the grouping of all the questions at the end of the story. Washburne also found that pre-reading questions calling for generalisations resulted in an improvement in generalising which spreads to facts not covered by such questions. It is surprising that the results of this significant investigation did not give a fruitful lead to other researchers, and did not seem to make an impact on the format for presenting textbooks or the instructional practices involving the use of these materials.

A follow-up study to Washburne's was conducted by Holmes in 1931, who used one hundred and seventy college students in matched groups reading materials concerning science and the history of English literature. One



group was given twenty questions to study before reading and the other group was not given any questions. They were tested immediately after reading and two weeks later with a forty item test involving twenty questions directly related to the twenty prereading questions ("question-relevant" information), and twenty questions which were not related to the prereading questions ("question-irrelevant" information).

The question guided group were significantly superior on the question-relevant items as well as on the question-irrelevant items. The guided group were superior also on the total of the two tests and especially on the delayed tests.

Both Washburne's and Holmes' investigations have been reported in some detail in this review because despite their similarity to the findings of present day research in this particular field, these historically and educationally significant studies seem to have been largely ignored by modern researchers. None of the several reviews of the relevant literature studied by this investigator for example refer to them.

Weintraub makes an important observation concerning the remarkable similarity in the findings of the researches in this particular area of investigation. He sees as a possible explanation for this concensus,

the fact that the majority of the studies have pursued research using similar kinds of questions, materials and procedures.

The questions have for the most part been ones calling for retention of specific details and facts based on a limited amount of reading and on an equally limited amount of information to be processed. The application of the research findings must then be considered as limited to a rather narrowly conceived and specific kind of reading - reading for details.  
(1969, p.753)

It should also be noted that in the majority of the studies referred to in this area, retention was almost invariably measured by the use of an objective type test taken immediately after the required reading was completed. The serious limitations of this practice on the extent to which the results of studies in this area may be widely generalizable will be referred later in this review when a study by Natkin and Stahler (1969) is reported. However, the results of the majority of the recent studies concerned with the characteristics of questions that influence learning from textual materials, have been summarised in reviews published by Pyper (1968), Weintraub (1969), Frase (1968a, 1970) and Rothkopf (1970). These usually examine the related literature under similar headings:

the placement or position of the inserted questions, the types of question employed, and the frequency with which they are inserted or the contiguity of the questions and the related content. It is proposed in this review to report, in any detail, only those researches not reported in the papers referred to, and to record as briefly as possible only the significant findings of researches already reported under the three headings outlined above.

C. The position of the questions in the text.

The position of questions relative to the related content being read has been seen as an important characteristic to be investigated. Questions have usually been inserted in the text, either before or after the material to which they are related. The reading behaviour of the subjects can be significantly altered by changing these positions.

The immediate post tests have usually been designed to measure gains in "question relevant" learning (information directly related to the questions inserted in the text) and "question-irrelevant" learning (information not directly related to the questions

inserted in the text) against gains made by control groups who had no questions to guide their reading.

It is possible to state that test like events within a text have a generally facilitative effect on learning from written materials. Research by Frase, Patrick and Schumer (1970) and Peeck (1970) indicated however, that pre-questions depressed incidental learning below control group scores. This could be explained according to Frase from the cybernetic view of learning.

The depressing effect of specific pre-questioning confirms the cybernetic approach which suggests that when a question occurs before the reading passage students are provided with a criterion which terminates their reading responses. (1968a, p.324)

Once they have found the answer they are looking for they go on to the next question and may not even read the rest of the passage which may provide additional cues to aid retention.

All the studies, except Washburne's found that subjects learn most when they use adjunct post questions. This finding has been replicated by Frase, Rothkopf and Bruning in researches already reported in this review. It has also been established that only post-questions have a general and specific facilitative effect on

learning. That is, subjects retained more of the question-relevant and the question-irrelevant material than the pre-question or control groups.

It appears that pre-questions have a facilitative effect on learning only question-relevant information. Peeck (1970) who used 72 college students in two experimental and two control groups reading a 3,000 word prose passage about Greece for a fixed period of time, found that this superiority was maintained on a long term (seven day) retention test. He also found that these pre-question groups were significantly inferior on the delayed retention measure of question-irrelevant information, than the control group.

An interesting result was obtained by Pyper (1968) who investigated the effects of adjunct post questions, using Bloom's 1.12 questions on 1.12 (Knowledge of specific facts) and 4.20 (Analysis of relationships) learning. Three groups of college students were asked to study a 7,200 word passage. One group answered two text-relevant questions every nine paragraphs; another did the same with text-irrelevant questions. There were no questions inserted in the same passage read by the third group. Analysis of test scores did not support prior research, and no significant

learning differences were found among the treatments. Pyper was of the opinion that this may have been due to the question format, since multiple-choice questions are less sensitive to learning differences as well as less motivating. The investigator also reports that unforeseen effects of uncontrolled variables connected with post-test questions, post test length, or learning set made the investigation inadequate for its original objectives.

This investigator is of the opinion that the higher-order questions have a greater facilitative effect in the pre-reading position. The facilitative effects on learning of the physical position of the ~~adjunct~~ questions may be strongly influenced by the type of question asked and the consequent cognitive processing required by the question on the part of the subject.

#### D. Types of questions.

In commenting on the implications for the classroom of the recent research on questions as an aid to reading Weintraub is of the opinion that

A teacher determines reading behaviour  
by the type of question he asks.  
(1969, p.755)

From the studies reported in the previous section of this review it is possible to draw two conclusions concerning the effects of factual questions, since all of these studies used this type of question:

1. That factual pre-reading interspersed questions facilitate the learning of question-relevant information but have a depressing effect on the learning of question-irrelevant information.
2. That factual post reading interspersed questions facilitate the learning of both the question relevant and question-irrelevant information.

These findings are in accord with Gagne and Bolles' view that

In general, it can be said that the learner will do better if he knows what he is supposed to do. (1964, p.34)

If reading was only an information learning process then the answer to developing more efficient methods of learning through reading would lie in the two conclusions recorded above. But reading requires the development of important abilities above simple memory.

In discussing the question as to how much thinking or reasoning the average reader uses spontaneously, Spache (1964, p.24) is of the opinion that they only use the degree or kind that enables them to meet the minimal

demands made on their comprehension. In order to demonstrate this Keislar (1960) conducted a simple experiment with grade five pupils. He trained a group of pupils to expect a number of questions stressing only the main ideas when they had completed their daily reading assignments. A second, comparable group was required to answer questions which consistently emphasized only the details of their reading. After a period of training, the questions were switched one day and each group was asked to answer the other type of question. When faced with a different question most of the children were completely at a loss. Keislar concluded that they had simply not employed that kind of thinking (1960) Spache expresses the view that

. . . although certain higher mental processes may be important in reading, they are not always present in every pupil's reading act. In fact, the more advanced reading habits, such as we speak of in critical reading, may never appear unless the student is specifically trained for them. (1964, p.29)

The research conducted by Guszak, Taba, Rothkopf, and Perry already referred to gives a clear indication of the role of the higher order question in promoting interactive, purposeful reading. It is somewhat surprising therefore to discover the paucity of studies



which have as their aim, the determining of the facilitative effects on learning from written materials of questions classified by Bloom (1956), Barrett (1968) or Sanders (1966) above the literal level.

Sanders (1966) hypothesized that questions which demand cognitive processing above the level of mere factual recall will, through practice, develop intellectual skills and will not result in poorer learning of factual information. Allen remarks that

This hypothesis has received popular support but has been subjected to very little empirical research. (1970, p.333)

Allen designed a study to test Sanders' (1966) hypothesis and to consider possible interesting effects of advance organizers in relation to alternative explanations provided by Rothkopf's concept of mathe-magenic behaviour. It was thought that higher order review questions might, through bringing the student into contact with a greater amount of material, result in more generalised learning than that found in previous studies with questions at the simple recognition and recall level. It was also thought that this action on the part of the student might enhance the facilitative effects of advance organisers. Allen used 212 ninth graders (fourteen year olds approximately)

in twelve classes in two junior high schools, randomly assigned to four treatment groups. Two groups used 300 word advance organizer introductions accompanied by either memory level or higher order questions and two groups used the same questions without the advance organizer introductions. Social studies materials were used and the length of the passages varied from 1045 to 1710 words. Tests measuring retention of question - specific learning and generalised higher order learning of narrative and descriptive material, were administered the day following the completion of four learning sessions and equivalent forms were administered three weeks later. Allen reports that the results of the study indicate no support whatever for the hypothesis that higher order questions will result in equal retention of factual information. Nor do the higher order questions used in this study result in general facilitative effects on learning. In these respects, neither form of question showed significant overall advantages over the other. It should be pointed out, however, that Allen used the questions in the post reading position. This may well be the least facilitative position to place higher order questions. One of the purposes of this current

investigation is to examine this problem.

Studies by Rothkopf and Bisbicos (1967) and Frase (1968c) aimed at examining the facilitative effects on learning of specific and general directions and questions, caused Frase to conclude that

These findings can be taken to mean that learning behaviours might also be modified in accordance with the amount of information that must be processed. (1970)

From his three studies using adult subjects aimed at inducing thinking about texts by having them deduce possible answers for reasoning-type orienting directions, Frase formed the conclusion that higher level cognitive operations are not simply produced by asking higher level questions although he sees this as a useful method of controlling reproductive memory. These studies demonstrated

that higher level processing adds new items to memory, consequently raising the overall level of recall. Surprisingly, however, the consequence of deeper processing was to influence the retention of text information, and only slightly the deeper inferences which could be drawn from the text. (1969, Dec. p.15)

In their study however, of critical reading, King and others (1967) pointed out that when children were asked more interpreting, analyzing, applying and evaluating questions they were able to respond at

higher levels of thinking. Weintraub observes that

Certainly much more research is needed on the impact of questions calling for higher level reading-thinking skills. (1969, p.755)

From these, and the studies by Washburne (1929) and Pyper (1968) already reported in this review the conflicting and sometimes unexpected results related to higher order questions are probably the outcome of several interacting factors, not the least of which is the meagerness of the amount of research carried out using these kinds of questions. It is proposed in this investigation to have two of the experimental groups use higher-order (reasoning-type) questions to guide their reading.

#### E. Frequency of questions.

The frequency with which adjunct questions are inserted in a passage is also an important determinant of effective reading behaviour. Carmichael and Dearborn (1947) for example found by inserting every 25 pages a "quiz" covering the preceding material that students could be kept reading for continuous six hour periods. They compared their results with those achieved by Hoffman (1946) who had demonstrated that the pattern of eye movement associated with

reading steadily deteriorated over a four hour uninterrupted reading period. Hoffman's graph of the variability of eye movements of his students, and the number of lines they read a minute over the four hour period, resembled extinction curves.

Carmichael and Dearborn on the other hand in comparing their findings with those of Hoffman were able to report that,

The result of this apparently small change in experimental conditions (the insertion of quizzes every 25 pages) was to demonstrate the virtual absence of work decrement or fatigue on the part of all subjects . . . , so far as the objective records of the eyes' behaviour are concerned. (1947, p.370)

As Rothkopf observes, in discussing the concept of mathemagenic behaviour and how this is frequently observed to deteriorate (from the instructional point of view) during the course of student's study:

The important thing is to keep him going. That may even be enough. (1968, p.145)

Adjunct questions inserted in textual materials appear to serve this function.

Using 72 college students, Frase (1967) varied the length of passages between questions and found that even though the total number of questions remained the same, the effect of question pacing

tended to be different for retention of relevant material as opposed to incidental material. Frase concludes that the results seem to confirm a small step approach for specific retention and a large step approach for general retention.

In a study aimed at investigating the effects on short and long term recall of prose materials of different dimensions of arousal created by two methods of presenting adjunct questions, Natkin and Stahler report a significant finding. Under conditions of high pre-exposure to questions (low arousal effect because of habituation), there was a typical decline from immediate to delayed testing. When questions were introduced with no pre-exposure (high arousal because of newness), they resulted in a marked increase in delayed performance. They conclude that

If long-term performance is more important than short-term, questions should be used sparingly, perhaps only at quite important points. If short-term performance is more important ... they should be liberally supplied. (1969, p. 431)

Their results also emphasize the importance of including long-term retention measures in learning studies, particularly those investigating mathemagenic behaviours which often use 'testlike events' for the control and shaping of inspection activities on the part of the

learner.

It is proposed to use two different measures of long term retention in the investigation being reported in this thesis.

In a rather ingenious study aimed at exploring the influence of motivation in modifying the effect of adjunct questions, Frase, Patrick and Schumer used 270 undergraduates and promised them 0 cents, 3 cents and 10 cents for each correct answer on a test given immediately after reading. Questions were placed either frequently or infrequently in a text, before or after the relevant material. Controls read the text without adjunct questions. These investigators report that the customary advantage of post questions over pre-questions diminished under the effects of high incentive, pre-questions inhibited incidental learning when they were frequent but infrequent, adjunct questions result in a take-over by the incentive factor. They concluded that

Question frequency thus appears to be a contributing factor in modifying the influence of motivational effects. Thus, the contiguity of questions (or other verbal directions) and related content may be a primary factor in the control of text learning. (1970, p.55)

In the study being reported in this thesis the

placement of the questions or directions will be close to their related content. Their frequency will be governed primarily by the rate of presentation within the materials of key generalizations and knowledges which are seen by the instructor as critical for the study of the whole topic.

F. The effects on learning from written materials of overt versus covert responses.

According to De Cecco (1968, p.499) the most useful distinction between these two types of response mode is illustrated in a study conducted by Krumholtz and Weisman (1962). In this investigation the students who were required to make overt responses wrote down their answers on sheets of paper. Those who made covert responses were asked to mentally compose a response to each blank in the frame before turning the page to the correct answer.

Much of the work done in investigating the effects on learning of varying the response mode, has been conducted in the field of programmed instruction. The equivocal nature of the results obtained from these



studies is probably their outstanding feature.

Anderson for example, observes that

It has been an article of faith among programmers that students learn more when they are required to make frequent overt responses. Therefore, it was a distinct surprise when most of the research seemed to show that students who were required to make overt responses learned no more than students who were asked to "think" the answers that went into the blanks or to read programs with the blanks filled in. (1970, p.355)

To support this conclusion he refers to studies by Alter and Silverman, 1962; Crist, 1966; Della Diana, 1962; Hartman, Morrison and Carlson, 1963; Lambert, Miller and Wiley, 1962; Stolurov and Walker, 1962; Tobias and Weiner, 1963.

In commenting on a summary of studies reported by Silberman (1962) reviewing research in this field, Feldman concluded that

Filling in the blanks, or program-induced activity (as opposed to self-imposed activity which a student habitually uses when reading), therefore does not always seem to produce better learning. (1965, p.133)

De Cecco (1968) and Byers (1967) while agreeing that the relative benefits of overt and covert responding have not always been consistent, refer to an important conclusion reached by Anderson (1967a) which they claim

has considerable empirical support. Anderson concluded that constructed, overt responses appear to facilitate learning most when response learning was important, that is when the learner has to construct the response rather than select an answer from a series of alternatives. Skinner (1958), and Wallen (1963, pp.499-500), all emphasize the need for the learner to make a full and complete response, and Anderson hypothesized that

the requirement to make overt responses might be facilitative provided the correct responding was contingent upon attention to all the critical material.  
(1970, p.355)

This last observation appears to give a possible lead to the reasons for the conflicting results obtained in the investigations in this field. For the rather superficial cognitive processing tasks usually required by programmed instruction, it does not seem to matter greatly whether the learner is required to make an overt or a covert response for the desired learning outcomes to recur. In fact it may be as Briggs, Goldbeck, Campbell and Nichols suggest

the motivation to construct the response during learning interfered with the use of all the relevant information presented in the frame.  
(1962, p.89)

Whereas in programmed materials, the programmer has already carried out much of the cognitive processing required, in order that the learner will be able almost invariably to make the correct response to the task, the chief problem for educational engineering may well be as Anderson suggests

to discover how to alter the characteristics of instructional tasks so as to force students to do all of the processing required for learning. (1970, p.353)

As indicated by studies conducted by Perry (1959) and Keislar (1960) already reported in this review and reiterated by Anderson:

. . . people tend to follow a law of least effort . . . (and they) . . . can be counted on to engage in only the processing demanded by the task. (1970, p.363)

He goes on to suggest that

The trick is to arrange a task that requires full processing from the learner. (1970, p.364)

It is proposed in this study, in an attempt to ensure that the subjects using the reasoning-type questions in the pre and post reading adjunct positions engage in this 'full processing', and that they be required to construct overt (written) responses to all the questions as they proceed with their reading task. It is also proposed for comparative purposes, to require

the subjects using the factual-type questions and directions in the post reading position to follow the same procedure.

The requirement that subjects make overt responses during their reading, it can be predicted, will cause a substantial increase in the amount of time these subjects will need to complete their task, when compared with the control groups. The only study reported in this review that attempted to equalise the time for the reading for all subjects, was that of Peeck (1970). The remainder of the studies appear to have virtually disregarded this variable, apart from occasionally recording the time taken by each subject to complete their reading and reporting the effects of the different procedures on the time taken for the reading by the subjects. It is proposed to follow the latter procedure in this study. The reasons for this will be outlined when the results of the investigation are discussed.

#### G. The problem of reading time.

An interesting finding is reported in the studies by Rothkopf and Bisbicos (1967) and Frase (1970) with regard to reading time being differentially affected by

prequestioning and postquestioning within passages. It would appear that postquestioning tends to slow down reading while prequestions seem to allow the subjects to read more quickly, although not beyond the rate achieved by the subjects who read the same passages without the aid of questions.

The reasons for this may well rest in the inspection behaviours of the readers while they are carrying out the reading task. The prequestioning group know what they are looking for and may not even have to read the whole section to determine the answer. The postquestion group on the other hand know that they are going to have to answer a question at the conclusion of the section, but they are not sure what information will be relevant to the question. It is probable that they slow their reading down in order that they may be better prepared for the question.

The Rothkopf and Bisbicos (1967, p.60) study gives an excellent illustration of the effects on the variation in inspection time, related to the position of the question. The results of this study demonstrated that after the first few pages the three prequestion treatment groups read on the average consistently faster than the three postquestion treatments.

The recent study by Frase, Patrick and Schumer (1970, p.53) also demonstrated that not only did question placement influence time, with the control (no question) groups reading the fastest, and the prequestioning and postquestioning groups being in the same order as in the Rothkopf and Bisbicos study just reported, but that incentive effects were also apparent in the reading time scores. The group receiving no incentive (in the form of no payment) had the fastest mean reading time, and the group receiving the highest incentive (in the form of 10 cents for correct answers to questions) taking the longest.

In reporting on experiments conducted by Evans, Glaser and Homme (1959) comparing achievements of students reading conventional textbooks with those of students using the same text which had been "programmed" requiring active student responding at each step, Lumsdaine and Glaser point to an important problem in this type of research.

An awkward question for interpretation is posed in some of these experiments by the fact that the somewhat higher mean achievement with the programmed materials was accompanied by an increase in the time spent in study. (1963, p.664)

Peeck also points to this problem when he observes that

Lack of control of reading time makes it hard to decide whether better results in retention are due to extended inspection time or to a more attentive, active reading process. (1970, p.241)

In his study which had as its main purpose the investigation of effects of prequestions on delayed retention of question-relevant and question-irrelevant prose content, two experimental groups and one control group were given equal reading time. In addition an extra control group was used and allowed to study the learning material for as many minutes longer as the experimental subjects were given to deal with the prequestions.

As one of the results of this study, Peeck concluded that the results achieved on the post tests by the control group which used prequestion time for reading

show that regarding the total amount of knowledge acquired, time spent on prequestions might just as profitably be used for simply extending the reading time of the actual reading material. (1970, p.245)

However it must be pointed out with regard to this study that the procedure followed was similar to

that of Berlyne's (1954b, 1966) where the subjects read all the prequestions before commencing reading. In Peeck's study the subjects had to read fifteen questions. This practice would not appear to be conducive to maximising effective mathemagenic behaviours on the part of the subjects due to the possible confusion that this number of questions could create in the minds of the readers. Apart from this "confusion" factor, it has been demonstrated by Rothkopf (1965) that factual prequestions may at times depress the level of achievement for the subjects using this procedure below that of those simply instructed to read carefully.

As with the number of researches investigating the facilitative effects on learning of various types of questions, the paucity of the studies in this field where the variable of time has been attempted to be controlled, is the outstanding feature. It is probable however, that the main reason for this lies in the fact that the origin of many of the studies aimed at establishing relatively simple methods for facilitating learning from textual materials, lies primarily in the Carmichael and Dearborn (1947) study already referred to in this review. The studies in this field have aimed at



determining methods of not only sharpening the readers' inspection activities while reading, but of establishing acceptable means of keeping him working at the task. To this extent an increase in the time spent on reading is not only expected, and accepted, but is seen as instructionally desirable.

- H. Some conclusions concerning the facilitative effects on learning from prose materials of adjunct questions and directions, and the formulation of the experimental hypotheses.

Testlike events inserted in prose materials may have, as Rothkopf (1967) suggests, two important effects on facilitating learning. Their simplest function may be their direct instructive effect. They may promote the formation of associations to be learned. Bruning (1968) suggests that such events may function as practice trials for factual and conceptual materials. Frase (1967) hypothesized, for example, that placing questions after passages requires the subjects to review implicitly content which had just been read. He concluded that the orienting task, whether a question, a graph, or combination of various aids, must ensure

that Ss execute all the responses necessary for successful performance of the criterion task, including

rehearsing the stimulus, rehearsing the response, and putting the two together.(1967c)

Pyper (1968) sees the instructive function of testlike events as that of informing the learner as to the knowledge of the task he is required to perform through alerting him to the nature of the posttest to follow the material. The review or 'backward looking' functions of testlike events inserted in prose material and the knowledge of the task these events provide, may be seen as having important facilitative effects on associations to be learned.

A second, and to Rothkopf especially, a more important function of testlike events in prose materials is their general attention-like effects, that is, their effects on the inspection (studying) behaviour of the student. Cybernetic and mathemagenic approaches to the management of instruction as already indicated emphasize the control of behaviours which facilitate learning rather than the associations to be learned.

The basic issue here is the adaptive control of appropriate study habits.  
(Frase, 1968, p.325)

Rothkopf, in discussing the concept of mathemagenic activities was of the opinion that

the most interesting experimental result in the adjunct question experiments was that mathemagenic activities are adaptive. (1970, p.333)

According to Frase, for testlike events inserted in prose materials to be cybernetically or mathemagenically positive they seem to have two main components:

they specify cues for initiating and terminating information processing (the range of stimuli to be processed), and they also specify a processing activity to be performed with those stimuli. (1969, p.2)

It is in their capacity to generate these specific 'selective encounters', as Frase calls them, that inserted testlike events have such a fundamental role to play in instructional tasks which involve reading.

It is therefore hypothesized with respect to this study:

- 1 (a) That the pre factual groups will have significantly higher corrected post test achievement scores than those achieved by the groups directed to 'read carefully'.
- 1 (b) That the post factual groups will have significantly higher corrected post test achievement scores than those achieved by the groups directed to 'read carefully'.

Bruning, however, hypothesizes that testlike events within prose materials may also have a more general facilitative effect on learning. He suggests that they may serve

... as one type of environmental control for inspecting behaviours, affecting such things as set, rate, and persistence of the reading responses. Under the control of such testing the learner tends to engage in more careful inspection of the prose document and to search for meaningful facts and concepts consistent with those encountered in the testlike events. (1968, p.16)

It is expected that the findings of Frase, Patrick and Schumer (1970) and Rothkopf and Bisbicos (1967) concerning the effects on reading time of interspersing factual questions in prose material will be reproduced in this study.

It is therefore hypothesized with respect to the time taken for the reading task by the students involved in this experiment:

- 2 (a) That the groups directed to 'read carefully' will take significantly less time to complete their reading task than those groups being directed to read with adjunct factual questions.
- 2 (b) That the groups directed to read with post factual questions will take significantly more time to complete their reading task than those groups directed to read with pre factual questions.

The general facilitative effect on learning of inserting testlike events after prose passages is recognised by Frase who sees questions acting 'in a forward manner optimizing "mathemagenic" behaviours on passages following the questions.' (1967) Whereas questions which occur before prose passages (and are relevant to those passages) tend to limit the general facilitating effects of testlike events, because of their cybernetic function, placing questions after passages to act as a review alters their function. Frase hypothesizes that

The questions now provide a general test-taking orientation applicable to the paragraphs which follow. (1967, p.270)

It is therefore hypothesized with respect to this study:

3. That the post factual group will have significantly higher corrected achievement scores on the second, third and total post test scores uncorrected for time compared with the scores achieved by the pre factual group.

It seems to this investigator that if the forward looking effect of questions not even directly relevant to the information contained in the passage to be read could be converted from a 'general test-taking orientation' to what Bruning called

a search for meaningful facts and concepts consistent with those encountered in the test-like events (1968, p.16)

that learning could be facilitated to an even greater extent. If the readers were to be given a carefully constructed reasoning-type question before they commenced reading the relevant passage, that these questions by their nature would keep the cybernetic effect open for much longer, thereby maximising the mathemagenic activities of the reader. Provided the questions required it, the reader would be compelled to interact with all the significant information in the passage in order to arrive at a satisfactory answer to the question. It seems probable, also, that the placing of a reasoning-type question in a pre-reading position causes it to function in a similar fashion to Ausubel's (1963) advance organizer, providing the reader with a heading under which relevant information may be subsumed.

It is therefore hypothesized with respect to the results obtained from the first year student groups involved in this study:

4. That there will be a significant treatment effect on the pre reasoning groups corrected achievement scores for the second, third and total post tests (not corrected and corrected for time) when compared with the corrected achievement scores of:

- a. the 'read carefully' group,
- b. the pre factual group,
- c. the post factual group, and
- d. the post reasoning group.

From the relevant investigations reported in this review it is possible to conclude that on immediate, objective-type post-tests of question-relevant information the position and type of question appears to have had a similar facilitative effect on learning from prose material.

It is therefore hypothesized with respect to the results obtained from the first year student groups involved in this study:

- 5(a) That there will be no significant treatment effect between the corrected achievement scores of all of the question guided groups when the first post test scores are compared.
- 5(b) That there will be a significant treatment effect for each of the question guided groups on each of the post test measures when compared with the 'read carefully' (control) group.

It has now been clearly established that adjunct post questions of a factual nature usually have a significantly greater facilitative effect on learning

question-relevant and incidental information from prose materials than similar questions inserted in the pre-reading position. However, studies by Allen (1970) and Pyper (1968) already reported in the chapter have demonstrated no such advantage for higher order questions interspersed in the post-reading position, although Pyper indicated that some unforeseen effects of uncontrolled variables made his investigation inadequate for its original objectives.

From his series of three rather ingenious studies in 1969 examining the facilitative effects on learning of different types of orienting directions including ones calling on the subjects to reason as they read, Frase concluded that

requiring Ss to analyze a text more deeply does not ensure the acquisition of deeper knowledge, but it may be a useful method of controlling reproductive memory. (1969, Dec., p.16)

He pointed out, however, with regard to the results in these studies, that the reason for the subjects' poor recall of inferential material may have rested with their incomplete or inadequate reasoning powers.

Whereas prereading higher order questions may provide the reader with a type of advance organiser under which to subsume relevant information as he reads, the post-reading, higher-order question, because of its position, cannot play this important role. It seems



probable that its main function may be to cause the reader to review what he has just read in order to attempt to arrive at a satisfactory answer to the question. Because of this, it could be predicted that post-reading reasoning-type questions will have a similar facilitative effect on learning from prose material as factual post-reading questions. This review function should also cause a significant increase in reading time.

It is therefore hypothesized with regard to this study:

6. That there will be no significant difference between the corrected achievement scores of the post reasoning group and the post factual group when the first, second, third and total post test scores, uncorrected for time, are compared.
7. That the post reasoning group will have significantly higher corrected achievement scores when compared with the pre factual group on the second, third and total post test scores, uncorrected for the effects of time.

It has already been hypothesized that requiring students to read textual materials with adjunct factual questions will significantly increase the time taken for reading. The effect of adjunct reasoning-type questions in textual materials for which overt or covert answers

are constructed should require the reader to engage in more complex cognitive processing in order to arrive at satisfactory answers.

It is therefore hypothesized with regard to this study:

8. That the groups directed to read with adjunct reasoning questions will take significantly more time to complete their reading task than those groups directed to read with adjunct factual questions.

The probable review function of post reading adjunct questions has already been commented on in hypothesis two (b). It can be predicted, without being stated as a formal hypothesis, that the review function required for answering post reasoning questions will greatly increase the time required by students to complete the reading task. It can also be predicted that the increase in reading time could bring with it an increase in the fatigue factor for those students using this kind of question in this position, due to the extended period of concentration required. This could have a significant effect on the students' ability to complete the immediate post-test, since, because of its objective-type nature, this will also require a further period of concentrated reading.

It has already been predicted that the post factual group's mean achievement scores will be significantly higher on the post tests than those of the pre factual question group. It has also been predicted that the opposite results will occur with regard to the reasoning type question guided groups: that the pre-reasoning question group's mean achievement scores on all except the first post-test will be significantly higher than those of the post-reasoning question groups.

It can therefore be hypothesized with respect to the first year student experimental groups involved in this study:

9. That there will be a significant interaction effect observed when the corrected achievement scores between question type and question placement are compared for all post-tests. The post factual and pre-reasoning groups will achieve at a higher level than the pre factual and post-reasoning groups.

#### I. Limitations of previous studies

Criticisms of various aspects of the research design of studies conducted in the area of facilitating learning from textual materials have been made by Weintraub (1969, p.755), Peeck (1970, p.245), and Frase (1970a, p.341) and these papers have all been referred to in this chapter. However, the criticisms appear to have been best

summarized by Pyper in a paper presented in 1968 at the Annual Convention of the National Society for Programmed Instruction. Pyper is doubtful of the degree to which the results of the studies in this area can be generalized as useful principles to follow for classroom practice. He lists the following reasons for his skepticism.

First, as is the case with much educational research, the research activities that have been reviewed have been one-shot, short instructional experiences, atypical and even somewhat irrelevant to the learning atmosphere and environment from which the Ss were obtained ...

Second, the fact that the research reviewed wasn't course imbedded but obviously something special raises the problem of the Hawthorne effect. The activation of this influence greatly limits the generalizability of the results.

Third, the facilitative effect of inserted questions is enhanced by the procedural manoeuver of not allowing the Ss to back track and reread material ... Experimentally this condition is necessary but practically it is rather unrealistic and unrepresentative of practically all instruction.

Lastly, the implications of Rothkopf's "Care" group, that is, the group that was told to read carefully, present a dilemma that has been essentially pigeon-holed. The implications are of course that detailed instructions can be just as effective as the most effective procedure of inserting questions. (1968, pp.7-8)

The investigation being reported in this thesis has been designed to overcome, or at least reduce the effects of the limitations recorded by Pyper of much of the previous research in this particular field.

## BIBLIOGRAPHY

- Allen, D. Ian (1970), Some effects of advance organisers and level of question on the learning and retention of written social studies material, Journal of Educational Psychology, Vol. 61, No.5, 1970, pp.333-339.
- Alter, M. and Silverman, R. (1962), The response in programmed instruction, Journal of Programmed Instruction, I, Jan., 1962, pp.55-78.
- Anderson, R.C. (1967a), Educational psychology, Annual Review of Psychology 18, 1967(a), pp.129-64.
- (1970), Control of student mediating processes during verbal learning and instruction, Review of Educational Research, Vol, 40, No.3, 1970, pp.349-369.
- Austin, Mary C., and Morrison, C. (1963), The First R., New York, Macmillan and Coy., 1963.
- Ausubel, D.P. (1963) The Psychology of Meaningful Verbal Learning, New York, Grune and Stratton, 1963.
- Barrett, T.C. (1968), Taxonomy of cognitive and affective dimensions of reading comprehension, in The Sixty-seventh Yearbook of the National Society for the Study of Education, Part II, Innovation and Change in Reading Instruction, Chicago, The University of Chicago Press, 1968, pp.17-23.
- Berlyne, D.E. (1954a), A theory of human curiosity, British Journal of Psychology, Vol. 45, 1954, pp.180-191.
- (1966), Conditions of prequestioning and retention of meaningful material, Journal of Educational Psychology, Vol. 57, 1966, pp.128-132.
- Bloom, B.S. et al. (1956), Taxonomy of Educational Objectives, Handbook I, Cognitive Domain, New York, Longmans, Green and Co., 1956.
- Briggs, L.J., Goldbeck, R.A., Campbell, V.N., and Nichols, D.C. in Coulson, J.E. (Ed.), Programmed Learning and Computer Based Instruction, New York,

Wiley, 1962, p.89.

- Bruning, R.H. (1968), Effects of review and testlike events within the learning of prose materials, Journal of Educational Psychology, Vol. 59, No.1, 1968, pp.16-19.
- Byers, J.L. (1967), Verbal and concept learning, Review of Educational Research, Vol. 37, No.5, 1967, pp.494-513.
- Carroll, J.B. (1968), On learning from being told, Educational Psychologist, Vol. 5, No.2, 1968, p.5-10.
- Carmichael, L., and Dearborn, W.F. (1947), Reading and Visual Fatigue, Boston, Houghton Mifflin, 1947.
- Crist, R.L. (1966), Overt versus covert responding and retention by sixth-grade students, Journal of Educational Psychology, Vol. 57, No.2, 1966, pp.99-101.
- De Cecco, John P. (1968), The Psychology of Learning and Instruction: Educational Psychology, Englewood Cliffs, Prentice Hall Inc., 1968.
- Della-Piana, G. (1962), An experimental evaluation of programmed learning, Journal of Educational Research, Vol. 55, 1962, pp.495-501.
- Distad, A.W. (1927), A study of the reading performance of pupils under different conditions on different types of materials, Journal of Educational Psychology, Vol. 18, 1927, pp.247-258.
- Evans, J.L., Glaser, R., and Homme, L.E. (1959), A preliminary investigation of variation in the properties of verbal learning sequences of the "teaching machine" types, Lumsdaine, A.A. and Glaser, R. (Eds.), Teaching machines and Programmed Learning: A source book, Washington D.C., National Education Association, 1960, pp.444-451.
- Fechner, G.T. (1860), Elemente der Psychophysik, Leipzig, Breitkopf and Hartel, 1860.

Feldman, Margaret E. (1964), Learning by programmed and text format at three levels of difficulty, Journal of Educational Psychology, Vol. 56, No.3, 1965, pp.133-139.

Frase, L.T. (1967), Learning from prose material: length of passage, knowledge of results and position of questions, Journal of Educational Psychology, Vol. 58, No.5, 1967, pp.266-272.

— (1968), Effective prose reading: Shaping and discriminative effects of questions, (Mimeo) Bell Telephone Laboratories: Murray Hill, N.J. Paper read at Annual Convention of American Educational Research Association (1968).

— (1968a), Questions as aids to reading: Some research and theory, American Educational Research Journal, Vol. 5, No.3, 1968, pp.319-332.

— (1968b), Effect of question location, pacing and mode upon retention of prose material, Journal of Educational Psychology, Vol. 59, No.4, 1968, pp.244-249.

— (1968c), Some unpredicted effects of different questions upon learning from connected discourse, Journal of Educational Psychology, Vol. 59, No.3, 1968, pp.197-201.

— (1968d), Some data concerning the mathemagenic hypothesis, American Educational Research Journal, Vol. 5, No.2, 1968, pp.181-189.

— (1969b), A structural analysis of the knowledge that results from thinking about text, Journal of Educational Psychology Monograph, Vol.60, No.6, Pt.2, 1969, pp.1-16.

— (1970), Boundary conditions for mathemagenic behaviours, Review of Educational Research, Vol. 40, No.3, 1970, pp.337-347.

Frase, L.T., Patrick, E., and Schumer, H. (1970), Effect of question position and frequency upon learning from text under different levels of incentive, Journal of Educational Psychology, Vol. 61, 1970, pp.52-56.

- Gagne, R.M., and Bolles, R.C. (1964), A review of factors in learning efficiency, in De Cecco, J.P., Human Learning in the School, New York, Holt Rinehart and Winston, Inc., 1964, pp.30-51.
- Gibson, J.J. (1941), A critical review of the concept of set in contemporary experimental psychology, Psychological Bulletin, Vol. 38, 1941, pp.781-813.
- Glaser, R., and Taber, J.I. (1961), Investigations of the Characteristics of Programmed Learning Sequences, Pittsburgh, University of Pittsburgh, Programmed Learning Laboratory, 1961.
- Guszk, F.J. (1967), Teacher questioning and reading, Reading Teacher, Vol.21, December 1967, pp.227-234.
- Harlow, H. (1959), The formation of learning sets, Psychological Review, Vol. 56, 1959, pp.51-65.
- Hartman, T.F., Morrison, B.A., and Carlson, M.E. (1963), Active responding in programmed learning materials, Journal of Applied Psychology, Vol. 47, 1963, pp.343-347.
- Hershberger, W.A., and Terry D.F. (1965), Delay of self-testing in three types of programmed text, Journal of Educational Psychology, Vol. 56, No.1, 1965, pp.22-30.
- Hoffman, A.C. (1946), Eye-movements during prolonged reading, Journal of Experimental Psychology, Vol. 36, 1946, pp.95-118.
- Holmes, E. (1931), Reading guided by questions versus careful reading and rereading without questions, School Review, Vol. 39, 1931, pp.361-371.
- Howards, M. (1967), Stimulating reading in depth, in Figurel, J.A. (Ed.), Vistas in Reading, Newark, International Reading Association, 1967, pp.72-76.
- Keislar, E.R. Learning sets in a stimulus-response view of classroom motivation, in Spache, G.D. and Spache, Evelyn B., Reading in the Elementary School, 2nd Edition, Boston, Allyn and Bacon, 1964, pp.28-29.



- King, Martha, Wolf, Willavene, Huck, Charlotte, Ellinger, Bernice, and Gransneder, B. (1967), Observations of teacher-pupil verbal behaviour during critical reading lessons, Occasional Paper No.67-103, Ohio State University, 1967.
- Kleinsmith, L.J. and Kaplan, S. (1963), Paired-associate learning as a function of arousal and interpolated activity, Journal of Experimental Psychology, Vol. 65, 1963, pp.190-193.
- Krumboltz, D., and Weisman, R.G. (1962), The effect of intermittent confirmation in programmed instruction, Journal of Educational Psychology, Vol. 53, 1962, pp.250-253.
- Lambert, P., Miller, D.M., and Wiley, D.E. (1962), Experimental folklore and experimentation: The study of programmed learning in the Wanwatosa public schools, Journal of Educational Research, Vol. 55, 1962, pp.485-494.
- Lumsdaine, A.A. and Glaser, R. (Eds.), (1960), Teaching Machine and Programmed Learning: A Source Book, Washington D.C., National Education Association, 1960.
- Maltzman, I. and Raskin, D.C. (1966), Effects of individual differences in the orienting reflex on conditioning and complex processes, in Bakan, P. (Ed.), Attention, Princeton, D. Van Nostrand, Inc., 1966, pp.187-201.
- Melnik, Amelia (1965), The formulation of questions as an instructional-diagnostic tool, in Beery, A. et al, (Eds.), Elementary Reading Instruction, Boston, Allyn and Bacon, 1969.
- Merrill, M.D. and Stolurow, L.M. (1966) Hierarchical preview vs problem oriented review in learning an imaginary science, American Educational Research Journal, 3, 1966, pp.251-261.
- Musgrave, Barbara S. and Cohen, Jean C. (1966), Relationships between prose and list learning, Paper presented at a Symposium on Verbal Learning Research and the Technology of Written Instruction sponsored by the Office of Naval Research through Bell Telephone Laboratories, 1966.

- Natkin, G. and Stahler, Elizabeth (1969), The effects of adjunct questions on short and long-term recall of prose materials, American Educational Research Journal, Vol. 6, No.3, 1969, pp.425-432.
- Peeck, J. (1970), Effect of prequestions on delayed retention of prose material, Journal of Educational Psychology, Vol. 61, No.3, 1970, pp.241-245.
- Perry, W.G. Jnr. (1959), Students use and misuse of reading skills: a report to the faculty, Harvard Educational Review, Vol. 29, No.3, 1959, pp.193-200.
- Postman, L. and Sanders, V.L. (1946), Incidental learning and the generality of set, Journal of Experimental Psychology, Vol. 36, 1946, pp.153-165.
- Pressey, S.L. and Kinzer, J.R. (1964), Auto-elucidation without programing, Psychology in the Schools, I, 1964, pp.359-365.
- Pyper, J.R. (1968), Attentional factors in learning from written texts, Journal of Developmental Reading, Vol. 14, No.1, 1970.
- Roderick, Marianne and Anderson, R.C. ( ), A programmed introduction to psychology vs a text-book style summary of the same lesson, Journal of Educational Psychology.
- Rothkopf, E.Z. (1963b), Some conjectures about inspection behaviour in learning from written sentences and the response mode problem in programmed self-instruction, Journal of Programmed Instruction, Vol.2, 1963, pp.31-46.
- (1965), Some theoretical and experimental approaches to problems in written instruction, in Krumboltz, J.D. (Ed.), Learning and the Educational Process, Chicago, Rand-McNally, 1965.
- (1966), Learning from written instructive material: An exploration of the control of inspection behaviour by test-like events, American Educational Research Journal, Vol. 3, 1966, pp.241-249.
- (1968), Two scientific approaches to the management of learning, in Gagne, R. and Gephart, W.J. (Eds.), Learning Research and School Subjects, Itasca, F.E. Peacock, 1968.

- (1970), The concept of mathemagenic activities, Review of Educational Research, Vol. 40, No.3, 1970, pp.325-336.
- Rothkopf, E.Z. and Bisbicos, Ethel E. (1967), Selective facilitative effects of interspersed questions on learning from written materials, Journal of Educational Psychology, Vol. 58, No.1, 1967, pp.56-61.
- Sanders, N.M. (1966), Classroom Questions, What Kinds? New York, Harper and Row, 1966.
- Silberman, H.F. (1962), Characteristics of some recent studies of instruction methods, in Coulson, J.E. (Ed.), Programmed Learning and Computer Based Instruction, New York, Wiley, 1962.
- Skinner, B.F. (1958), Science of Human Behaviour, New York, Macmillan, 1958.
- Spache, G.D. and Spache, Evelyn B. (1964), Reading in the Elementary School, 2nd Edition., Boston, Allyn and Bacon, 1964.
- Stolurrow, L.M. and Walker, C.C., A comparison of overt and covert response in programmed learning, Journal of Educational Research, Vol. 55, 1962, pp.421-429.
- Taba, H., Levine, S. and Freeman, F.E. (1964), Thinking in Elementary School Children, Cooperative Research Project 1574, San Francisco State College, 1964.
- Tobias, S. and Weiner, M. (1963), Effect of response mode on immediate and delayed recall from programmed materials, Journal of Programmed Instruction, 2 (1), 1963, pp.9-13.
- Underwood, B.J. (1963), Stimulus selection in verbal learning, in Cofer, C.N. and Musgrave, B.S. (Eds.), Verbal Behaviour and Learning, New York, McGraw Hill, 1963, pp.37-47.
- Wallen, N.E. and Travers, R.M.W. (1963), Analysis and investigation of teaching methods, in Gage, N.L. (Ed.), Handbook of Research on Teaching, Chicago, Rand and McNally, American Educational Research Association, 1963, pp.448-565.

Washburne, J.N. (1929), The use of questions in social science material, Journal of Educational Psychology, Vol. 20, No.5, 1929, pp.321-359.

Weintraub, S., The question as an aid in reading, The Reading Teacher, Vol. 22, No. 8, 1969, pp.752-755.

## CHAPTER IV

## THE RESEARCH DESIGN

## Introduction

In this chapter the materials, methods, instruments, samples and procedures used for the experimental and survey sections of this investigation will be outlined, along with an explanation of the various terms used.

A. Experimental Section I: The facilitative effects of adjunct questions on learning and remembering when reading textual materials.

1. The Materials.

a. The reading materials.

The material read during this investigation comprised Chapter Fourteen of Spache & Spache (1969), Reading in the Elementary School, (Allyn & Bacon). The topic of the chapter was 'Developing Comprehension and Critical Reading Skills' and its length was approximately 7,700 words. The content of the chapter could be considered to be important for any individual involved in the study of reading, and particularly important for any student training to be a teacher.

Apart from its obvious specific content and course related importance the chapter was chosen for several other reasons. The style and content of the whole text makes it a good example of a tertiary level textbook and as such would

provide a good test of the students' ability to read and learn at this level. It is used, for example, at the post graduate level for study in reading at the University of Hawaii and as an undergraduate course textbook at Massey University in New Zealand. Those students involved in this investigation who were taking either the Reading Syllabus Study course or the Additional Reading Syllabus Study course were due to study this chapter as an integral part of their courses. For those students who were to be involved in the investigation, but were not taking either of the Reading Syllabus Study courses at the time, it could be pointed out that the content of the chapter would be useful to them during their practical training period in schools. It was also felt that since much of the content of the chapter was directly related to the investigation in which the students were taking part, it might assist in making the reading task more meaningful and interesting.

The length, the 'course-imbedded' nature, the level of difficulty of the material, and the relatedness of the topic to the investigation being undertaken, all appeared to contribute towards simulating what could be considered as a normal reading/study task for the subjects involved in this experiment.

b. The construction of the questions and directions.

The chapter had been divided into ten topics by the authors. One of these, 'Comprehension as a Decoding Process',

was specifically excluded from the reading required in this experiment as in this investigator's judgement the topic had been inadequately handled in this chapter due to its being examined more fully elsewhere in the text.

After a careful study of the chapter, this investigator in discussion with two other lecturers who had read the chapter selected what were considered to be the key ideas expressed by the authors, under each topic. For each key idea a factual question or direction was composed. These were to be used by the post factual treatment groups.

These factual-type questions and directions were then converted into reasoning-type questions. These were to be used by the pre and post reasoning treatment groups.

Finally, for each topic, factual-type directions and questions were composed. These were to be used by the pre factual treatment groups.

In all 24 post factual questions or directions were constructed, 24 pre and post reasoning questions, and for the nine topics to be studied in the chapter, nine pre factual questions and directions were composed. These pre factual questions and directions contained nineteen specifically stated purposes for the reading of the sections of the chapter. These closely resembled the 24 post factual questions already referred to, and were in fact constructed to call the readers'

attention to the same key ideas as the factual and reasoning questions.

Full details of each category of question and direction are included in the appendices to this thesis but an example of each type is included here for clarification.

(i) Factual question and/or direction.

What factors operate against the identifying and naming of long lists of comprehension and critical reading skills? List the three components of the reading act that have been identified.

(ii) Reasoning question.

Why is it difficult to name the specific reading skills that constitute comprehension and critical reading?

(iii) Factual direction.

Read this section to determine what the main problems are, associated with the naming of the specific reading skills that may constitute comprehension and critical reading. You should also determine what the only components are of the reading act that have been established by factor analysis studies so far.

The reason for the mixture of questions and directions in the factual guides was to simulate the different kinds of purposes the subjects could be expected to experience in their college course outlines.



## 2. Description of the Treatment Methods.

### a. General.

All the subjects taking part in this experiment were asked to read the material carefully. In order to continue in the attempt to parallel a normal reading/study task all subjects were permitted to take as long as they wished to complete the task and were allowed to refer back to the material at any time during their reading up to the time that they indicated their readiness to commence the immediate post test. The time taken by each subject individually for the completion of the reading/study task was recorded. For those subjects required to make overt responses to questions during their reading, no knowledge of the rightness or wrongness of their answers was provided. The subjects used either the textbook containing the chapter (provided it was unmarked) or a copy of the chapter in booklet form. Lecture rooms were used and the experiment, including the post tests, were conducted in scheduled lecture time, except where the reading of the material and the completion of the first post test took longer than two hours. For all groups the experiment, including the post tests, commenced either at 9.00 a.m. or shortly after that time.

### b. Specific.

There were five experimental treatments:

(i) Post factual.

All subjects in this group used a copy of the chapter in booklet form. There were 24 factual questions and/or directions inserted in the textual material immediately after the question (or direction) relevant information. Lined space was provided where the subjects would record their answers in writing. Subjects were instructed to read the relevant section of the chapter, read the question, compose and write their answer without referring back if possible. They were informed that the chapter booklets would be collected before the post test commenced.

(ii) Pre factual.

These subjects used either their textbooks or copies of the chapter booklet. They were issued with a cyclo-styled sheet of questions and directions. Each bold-faced heading within the chapter was recorded on the sheet along with its respective page number. The factual directions and questions relevant to each section were detailed below each heading.

The subjects were instructed to read each 'preview question and/or direction' relevant to each section before reading the relevant section and to use these to guide their reading. In order to continue to attempt to further simulate a normal reading/study task, these subjects were informed that they could take notes as they

read, but that they were not required to do so. They were informed that any notes they took would have to be collected before the post test was commenced.

(iii) Post reasoning.

An eight-page, cyclostyled booklet was given to these subjects. This contained their specific instructions, a space to enter starting and finishing time, the 24 reasoning-type questions to be used during the reading task, and lined spaces in which to write their answers to the questions. This booklet was collected when they had completed the reading task.

The instructions were read to the group and they were asked to read each section in the chapter relevant to each question before they read the particular question. They were instructed to try to complete their answers without referring back, but if they could not answer the question to their satisfaction, then they were permitted to refer back. They were shown how the end of each question-relevant section was indicated by a page number and the last few words in that section (e.g. p.454 ... the teacher stimulates). Subjects were asked to cover the questions with a sheet of paper, exposing only the page number and last line, to read to this line in the chapter, and then uncover the relevant question and construct their answer.

(iv) Pre reasoning.

These subjects were given the same booklet as the previous group, apart from their instruction sheet. They were instructed to read each question before they commenced reading the relevant section and to use the questions to guide their reading of each section. They were asked to write out their answers to each question without referring back if possible, but, as with the other groups, were permitted to refer back.

(v) Read carefully.

The 'read carefully' subjects were instructed to read the material carefully, as they would normally study content material of this type. They were informed that they could take notes if they wished, but that these would have to be passed in before the post test was commenced.

### 3. The Instruments Used.

#### a. Australian Council for Educational Research, Advanced Test AL and AQ.

The Australian Council for Educational Research, Advanced Tests AL and AQ, are administered to all students when they enter the Christchurch Teachers' College. This investigator has the responsibility for the annual administration and processing of results obtained from these tests. It is assumed that both of these tests are sufficiently well known

for the writer to forgo a detailed description of their construction, reliability and validity. Suffice it to say that they are described in their accompanying manual as being designed for use with adults of high ability and for students at high school leaving, matriculation and university level, and to provide good discrimination among such groups. Experience with the tests at the Christchurch Teachers' College over a number of years tends to confirm these claims.

b. The Australian Council for Educational Research  
Co-operative Reading Comprehension Test, Form Y.

The Co-operative Reading Comprehension Test, Form Y, is also administered to all students when they enter the Christchurch Teachers' College, and this investigator has the responsibility for the administration of the test and for the processing of the results obtained. The test provides four separate scores: vocabulary; speed of comprehension; level of comprehension, and total reading score. The scores obtained from the three sub-tests will be used for predictor variable purposes, while the total reading scores will be used for the reading improvement experiment being carried out as part of this investigation. It is assumed once again that this test is sufficiently well known for the writer to forgo a detailed description of its construction, reliability and validity.

c. The post test: objective-type.

A post test was constructed, composed of 28 multiple choice items, based on the content of Chapter Fourteen of

Spache & Spache. This test was administered to 120 first and second year students who had been required to read the chapter during the first semester courses of 1970. The results obtained were then subjected to item analysis procedures which resulted in two items being eliminated and thirteen being modified due to low indices of discrimination being obtained.

The test was then studied by three lecturers in turn who made suggestions which required further modification to be made to the items. Unfortunately, time and the availability of students who had read the relevant chapter prevented the test being administered again in its amended form, for the purpose of conducting a further item analysis. It was felt that this was needed because of the extensive modifications to the items.

An objective-type test of the multiple choice variety was chosen for measuring short term (immediate) and long term (ten week) retention for several reasons:

- (i) The items could be constructed so that they were relevant to the adjunct questions and directions provided for the experimental groups.
- (ii) Sufficient items could be constructed in order that every section within the chapter could have at least one question devoted to it.
- (iii) The objectivity of the marking achieved through the use of multiple choice items was seen as desirable,

especially for the measuring of immediate and long term retention.

- (iv) The use of multiple choice, objective-type tests is quite common in the institution from which the sample was to be drawn. The subjects would, therefore, be familiar with this form of test.

The final form of the test which is recorded in the appendices to this investigation, contains 26 multiple-four-choice items. Every question used in the test was relevant in some way to one of the adjunct questions or directions used by the four experimental groups. This post test, therefore, did not attempt to measure the extent of the question irrelevant (incidental) learning of the experimental groups, although the control able to be exerted over the question relevancy of the test items was not as rigorous as it should have been because of the length of the material to be read.

d. The post test: essay-type.

Since the objective-type test was used to obtain a measure of the extent of the subjects' more specific learning and long-term retention, it was felt by this investigator that what was also needed was a measure of the subjects' more general knowledge and understanding of the ideas and principles gained as a result of reading the chapter. It was also felt that an independent measure of long-term retention was needed since the ten-week, long-term retention measure was to be obtained by using the

same form of the objective-type post test.

A limited list and explain type of question was chosen for several reasons:

- (i) By limiting the factors to be listed to ten the subjects were forced to list only what they considered to be the most important ideas and/or principles. This also made for obtaining a higher correlation between the ratings awarded to each answer by the three raters to be employed.
- (ii) Requiring the subjects to list a number of factors provided a measure of their unassisted recall of key ideas and principles. Multiple-choice questions, on the other hand, by their very nature provide the subject with 'memory cues'.
- (iii) Requiring the subjects to explain each factor in their list served two main functions: it provided a measure of the subjects' understanding of the key factors listed and of the evidence they were able to recall to support their choice. It provided clarification of what the subjects meant by the factors which they listed, if the meaning of these was initially not clear. This in turn provided further opportunity for the raters to achieve a higher correlation among the marks awarded to each answer.
- (iv) The objective-type test consisted of question relevant items. It was seen as necessary for the results obtained from this investigation to be more widely



generalizable, that a measure was needed for students' incidental learning and retention. The essay question, in part at least, would provide this measure.

#### 4. The Sample.

The sample was drawn from first, second and third year students who were attending the Christchurch Teachers' College (Primary Division) in 1970.

##### a. First year students.

One first year group used consisted of 76 students who were taking the Reading Syllabus Study at the time of the investigation. The second group used comprised the 75 first year students who were taking the Mathematics Syllabus Study at the time of the investigation.

Both the Reading and the Mathematics Syllabus Studies are elements of the compulsory syllabus of instruction for all first and second year students at the Christchurch Teachers' College, and since both groups used in this investigation came from the same intake of students they could be considered to belong to the same population. It was anticipated, however, that one problem would be present as a result of using students from different syllabus studies for this investigation.

For the Reading Syllabus Study students, the material to be read was specifically 'course imbedded', the style of the authors was already familiar to this group. For the Mathematics Syllabus Study students the material would

not be 'course imbedded' until the following year, although from the aspect of their training to be teachers the content of the material could be classed as very important. In order to draw this group of students' attention to the 'future course imbeddedness' for them of the material to be read, and so attempt to equalise the effect of this variable, a specific comment was made to them concerning this point. This comment is recorded in the appendices containing the details of the instructions to the experimental groups.

b. Second year students.

The second year students used were those who were taking the Reading Syllabus Study at the time of the investigation. For these students the reading material used in the experiment was course imbedded. The major difference between this group and the first year groups lay in the fact that they had been studying at a teachers' college for a year longer and as a result of maturation, a wider experience in schools, and a probable improvement in reading and study ability, it was expected that the experimental groups of the second year students would achieve at a higher level on the experimental post tests than the first year students who experienced the same experimental treatment.

c. Third year students.

The third year students taking part in the investigation comprised approximately half the total third year

student population. A high mortality rate occurred with this group due mainly to their timetable being more flexible than the first or second year students. Of the 142 students who started the investigation only 114 remained in the experiment for all three post tests.

These students were taking the Additional Reading Syllabus Study course at the time of the investigation and the reading materials used were course imbedded for them also. This group could be considered to be a truly representative sample of the college population. As with the second year students, the major variable which could be predicted to have a significant effect on their post test performances was the effects of their longer period of training; they could be classified as the 'most experienced' group as a whole. It was expected that the third year experimental groups would have a significantly higher level of achievement on the post tests than their first and second year counterparts, who experienced the same experimental treatments.

#### d. General.

Since the pre-requisite qualifications for entry to a Division A (Primary) course of teacher training are common to all teachers' colleges in New Zealand, it is probable that any conclusions able to be drawn from the results obtained in this investigation could be generalized to students in other teachers' colleges in New Zealand. It is also probable that, since the sample includes 25 per

cent. of students taking part-time university study and another 25 per cent. who, through possessing the necessary entrance qualifications, could attend the university, any results obtained could also be generalized to at least first and second year university students.

The first year students taking part in the experiment were nearly all recently secondary school pupils. It is therefore probable that any results obtained could be generalized to at least upper secondary school pupils.

#### 5. The Procedure.

For all aspects of the experiment except the experimental treatments the procedure followed for all groups was identical.

One week before the experimental task was performed the various groups of students were asked if they were willing to take part in a research which was aimed at determining the most effective means of guiding college students' study-type reading. They were told that the task would involve their reading some material and taking a test after they had completed the reading. Since the experiment was to be conducted during scheduled lecture time no opposition was obvious.

The students were assigned to their experimental groups simply by numbering the respective rolls in threes. The students were directed to consult these and go to the lecture room recorded beside their name.

For all groups, the experiment commenced shortly after 9.00 a.m. and both long term retention tests were

given at this time also. In all cases the supervisors for the groups were familiar to the students as college lecturers.

The detailed instructions for each experimental group are included in the appendices to this investigation. Only a brief outline of the procedure followed is included here.

Each supervisor read the appropriate instructions to his particular group and distributed the necessary materials. By starting all his students reading at the same time he was able to record individual reading/study finishing times for all subjects taking part in the experiment.

On the completion of the reading/study task each subject completed the 26 item, objective type test. They were then permitted to leave the room.

Exactly one week later all subjects who took part in the experiment were asked to write an essay-type answer to a question on the experimental material they had read. No warning had been given to them of this test. The presenting of this task was prefaced by comments on their previous week's performance. These are recorded in the appendices, along with the essay-type question. The students were given twenty minutes to complete their answer.

The same procedure was followed ten weeks after the experimental reading/study task had been completed. The

students were retested using the 26 item, objective type test without prior warning. The time period of ten weeks was determined simply by the availability of the students, although it was felt that this period of time was sufficient to provide an adequate indication of long term retention.

A random sample of ten students from each of the three years of intakes was questioned at the conclusion of this test. They were asked if they had read any of the material in the experimental chapter before or since the day they were required to read it under the controlled conditions. Only two students admitted having referred to the chapter since the 'experimental' reading. They had referred to the section outlining Sanders' types of questions, for lesson planning purposes. No student reported having read the material prior to the day of the experiment.

#### B. Experimental Section II: Reading Improvement.

##### Introduction

The experiment outlined in the first section of this chapter was primarily aimed at examining under controlled conditions the effects on learning and retention from reading textual material using adjunct questions and directions of different kinds and placements. The part of the overall study to be outlined in this section of this chapter should be seen as nothing more than a 'preliminary investigation'.

It was related to the experimental work with adjunct questions by the fact that it aimed to discover if those students who were required to make extensive use of adjunct questions and directions ('directed reading') for their assigned reading, as an integral part of a course of study, achieved greater gains in their reading improvement than those students who were not required to use this kind of reading guide. It was realised by this investigator that the number of uncontrolled variables present in the study restricted the generalizing from any results obtained. The fact, for example, that the students who made extensive use of directed reading were actually pursuing a course concerned with the study of reading per se, introduced the possibility that any significantly greater reading improvement gains made by these students may well be a direct result of their increased knowledge and understanding of the nature of the reading process and the factors which may contribute or inhibit the development of this process.

However, despite the limitations of the lack of control of important variables, it was decided to proceed with the investigation. If any significant results were obtained these could lead to the designing of a more rigorously controlled experiment which would not use the study of reading as its basic content material.

#### 1. The Materials Used.

The main textbook used for the Reading Syllabus Study course was Spache & Spache (1969), Reading in the

Elementary School, (Allyn & Bacon). Some directed reading was also required to be done using Simpson (1961), Suggestions for Teaching Reading in Infant Classes, (New Zealand Department of Education). Cyclostyled notes of various kinds, concerned with the study of reading, were also used extensively during the course.

The students taking the course were also issued with a 34-page course outline containing administration information concerning the course and an outline of the topics to be studied which included extensive 'directed reading' assignments.

## 2. Description of the Treatment Methods.

Reference has already been made in Chapter One of this investigation to the 'directed reading' techniques used during the Reading Syllabus Study. An example of this method of guiding assigned textbook reading has been taken from the course outline and included in the appendices. It will be seen that the topic to be studied has an 'advance organizer' type introductory statement. This is followed by an extensive list of page numbered questions and directions of various kinds for which the student was required to find the answers.

The assigned reading for this course was presented in this manner, and the content of the material was the subject of regular, objective-type tests. These marks, coupled with those achieved for practical assignments, determine whether or not the student passed the course.



If the student was likely to fail the course his Reading Folder was collected and examined. If a perusal of this folder revealed that the student had not completed the directed reading, or at least taken comprehensive personal notes from his reading, he was almost certain to fail the course, this point being made quite clear at the outset of the course. It was hoped that those students who were not encouraged to complete their assigned reading through an intrinsic interest in the topic would be provoked to engage in the study of their texts to avoid failure, if for no other reason.

### 3. Instruments Used.

The Co-operative Reading Comprehension Test, Form Y, was used as the pre-test and the post test of reading achievement. This test has already been described in the previous section of this chapter. The need for a reading achievement test with a parallel form was not seen as necessary for this investigation. Any effects on the subjects' performance in the post test accruing from previous experience with the same form of the test would be similar for all subjects taking part in the investigation.

### 4. The Sample.

#### a. The 'Reading' groups.

The 'Reading' treatment subjects were first year students who took the Reading Syllabus Study course during

both semesters of 1969 and 1970. Only students for whom pre and post test Co-operative Reading Comprehension Test scores were obtained were used. This resulted in 1969 first semester syllabus study contributing 66 subjects and the second semester for this year 83 subjects, a total of 149.

Although 348 of the 1970 first year students were retested at the end of the college year, only the results obtained by every second student on the alphabetical college roll were used. The first semester syllabus study, therefore, contributed 41 subjects and the second semester 47, a total of 88 subjects.

When both 'Reading' treatment groups were combined, a total number of 237 test-retest results were available.

b. The 'No Reading' groups.

The subjects who made up the 'No Reading' groups were students who had not taken the Reading Syllabus Study course in their first year at college during 1969 and 1970, and for whom pre and post test Co-operative Reading Test scores were obtained. The 1969 'No Reading' group contained 151 students and the 1970 group 86, for a combined no treatment group of 237 students. This gave the same number of test-retest scores for both the 'Reading' and the 'No Reading' groups.

5. The Procedure.

All students in both the 1969 and 1970 intakes were tested during their first week at college on the Co-

operative Reading Comprehension Test, Form Y.

a. 1969 'Reading' groups.

During the 1969 Reading Syllabus Study the students who took the course were required to read ten chapters of Spache & Spache, and three chapters of Simpson using directed reading procedures. The students were required to write out the answers to the questions and directions for their assigned reading. During the course they were given four 'surprise' objective-type tests on their directed reading. They had been warned at the outset of the course that they could expect a test on any of the required reading.

b. 1970 'Reading' groups.

The 1970 students experienced the same course and used the same course outline. However, the directed reading procedure was changed for these students in that, except for two chapters, they were not required to write out the answers to the questions and directions, although they were encouraged to do so. As with the 1969 groups they were warned at the commencement of the course that any assigned reading could be tested on the day for which it was required to be completed. The 1970 Reading Syllabus Study students were in fact tested more frequently than the 1969 students, experiencing seven chapter tests in all.

c. 1969 'No Reading' groups.

During 1969 only one other college course used directed reading techniques for guiding their students' reading. This was the Science Syllabus Study course, which made much more limited use of this method than the Reading Syllabus Study. From the result of a question included in a course evaluation questionnaire given to a 1968 group of students it had been reported that 83 per cent. of their required textbook reading had been assigned by the simple device of the instructors giving page numbers or chapters to be read. Informal questioning of students and lecturers, and a perusal of a number of course outlines, confirmed that this was the practice followed almost universally.

For the purposes of this investigation, then, it could be assumed that the majority of students received no guidance for their assigned reading.

d. 1970 'No Reading' groups.

Directed reading techniques were used more widely in courses other than the Reading Syllabus Study during 1970, although no course made as extensive a use of this procedure as this course did. The Language, Science and Social Studies Syllabus Study courses all made some use of questions and directions for guiding required reading, as did the first year Education (Child Development) course.

C. Survey Section: Reading Habits, Attitudes and Problems.

Introduction

Two questionnaires were constructed by this investigator to obtain information concerning some of the reading habits, attitudes and problems of students attending the Christchurch Teachers' College. Copies of both questionnaires are included in the appendices to this investigation.

The Reading Syllabus Study Questionnaire was designed to be used with those students who had completed this particular syllabus study during their first or second year at the College.

The College Reading Questionnaire was designed to be used with all students who had completed their first year of training at a New Zealand teachers' college.

Both questionnaires were constructed using three different kinds of response format: the limited free response, where clues as to the length of the response expected and to the general content area of the response are given; the totally structured response where the respondent can only select from among those possible responses offered; and the structured response with free option, where an unstructured option is added at the end of a structured list. These categories of response formats are described in more detail in Fox, D.J. (1969), The Research Process in Education, (Holt, Rinehart & Winston) on pages 533 to 537.

1. The Reading Syllabus Study Questionnaire.

- a. Description of the Survey Instrument.

This questionnaire was designed for two main purposes. In the first instance it was employed to give students an opportunity to evaluate the Reading Syllabus Study course which they had just completed so that the course could be amended in the light of any major criticisms being made by a sufficiently large number of students. These sections of the questionnaire will not be reported on in this investigation.

The second main objective for this questionnaire was to obtain an expression of student opinion as to the values or otherwise of directed reading procedures as a method of guiding assigned reading during a course of instruction. The subsidiary aims for the questionnaire were to obtain information as to the means by which they are usually directed to their required reading, their opinions concerning their own reading ability, and any factors which they saw as contributing to their own reading improvement.

The final section of the questionnaire was amended for the 1970 second semester groups in an attempt to obtain more specific answers to four questions.

In the first questionnaire the students had been given a limited free response question concerning the methods by which they were usually directed to their required reading. For the last group to complete the questionnaire in 1970 this was altered to a totally structured response question

so that the subsequent analysis of the results would be more objective. The most common 'free response' answers from earlier completed questionnaires were used as items in the structured question.

More specific information was also needed concerning the way in which students made use of the questions and directions for their assigned reading, both when they were required to write out the answers, and when they were not required to write out the answers to the questions and directions. An indication was also needed as to how much of their required reading they estimated that they did for the Reading Syllabus Study in order that the results obtained could be compared with those obtained from the same question in the College Reading Questionnaire.

Included was a final question arising from the results of many informal discussions held with students and various staff members concerning the values or otherwise of directed reading for study-type reading. So many useful and interesting points of view had been expressed to this investigator that it was felt that the students, at least, should be given an opportunity of expressing their opinions as to what they 'thought' of this method of guiding their reading. A sample of their responses to this question is recorded in the appendices to this investigation.

b. The sample.

The Reading Syllabus Study Questionnaire was administered to four second year student groups during 1969

and 1970 and to the two 1970 first year student groups who took the course. A total number of 453 questionnaires was analyzed, although for some questions this number varied considerably. This variation was the result of a number of factors, some related to uncompleted questionnaires, some related to relative importance of the question, or to the difficulty in analyzing the results due to categorization problems. And finally, the 1970 amendments were completed by either one or two syllabus study groups.

c. The procedure.

The students were simply given the questionnaire to complete during the last scheduled period of the Reading Syllabus Study course. They were informed that the results obtained would be used for course revision and research purposes. They were not required to name their questionnaires, although they were permitted to do so if they wished.

2. The College Reading Questionnaire.

a. Description of the survey instrument used.

Before beginning to complete this questionnaire students were asked to indicate which of the four syllabus studies, and which two selected studies or university subjects, they had taken during their first year at the College. This was to make it possible in the future to analyze some of the responses made in the light of their



subject orientation. No other means of identification was required.

This questionnaire was designed to obtain information related to this investigation both of a general and specific nature. General information was sought on student reading and library usage and habits, and ownership of textbooks. The results obtained for these questions will not be reported in the body of this investigation, but only in the appendices.

Information specifically related to this investigation was sought on a number of topics. Students were asked to estimate how much of their required textbook reading they did during their first year at college. An indication was required as to what caused them to do their required reading. Information was also sought as to what factors they saw as causing them difficulty in reading, and what factors they saw, related to their college or university studies, as contributing to any improvement in their own reading ability.

In order to reduce the effects of the order in the placement of items in the totally structured response and rating scale-type questions, the order of the appearance of each item in these particular questions was reversed in the 1970 copy of the questionnaire. There were some further minor modifications to the 1970 version and these may be seen in the copy of this questionnaire which is included in the appendices.

b. The sample.

The questionnaire was administered to first year students at the Christchurch Teachers' College during the last week of the academic years 1969 and 1970. A total of 295 students were present from the 1969 intake of students and 322 students were present for the 1970 administration of the questionnaire, making a total of 612 for both years.

c. The procedure.

The students were assigned to rooms during the normal timetabled college hours. The questionnaires were distributed by college lecturers, all of whom were known to the students. These lecturers then read the information and instructions concerning the completion of the questionnaire and the reason for it being given. These remarks are recorded in the appendices to this investigation. Students were permitted to leave when they had completed the questionnaire.

D. Summary of the Three Sections of the Investigation.

The relationship among the three aspects of this investigation can now be briefly summarized.

The experimental section involving the use of adjunct questions and directions as guides for reading textual materials was aimed at determining if learning and retention of the material could be improved. Of specific interest here was the interactive effects of question type

and question placement in facilitating learning and retention. The reading improvement section of the study was specifically aimed at establishing at least the possibility that the extensive use of adjunct questions and directions for guiding assigned reading during a course of study may have contributed to any gains made by students in their reading achievement, in addition to the gains that they could normally be expected to make during the course of a college year.

And finally, the survey or questionnaire section of the investigations sought to obtain information from students concerning the advantages or disadvantages they saw in using adjunct questions and directions for guiding their assigned reading, and also some difficulties they met in completing their assigned reading when not given this type of guidance.

#### E. An Explanation of Terms Used.

##### Reading Syllabus Study

This should read 'Reading, Spelling and Handwriting Syllabus Study' but the title has been abbreviated in this study. Christchurch Teachers' College students training for the primary teaching service take eight 48 lecture hour syllabus studies during the first two years of their three year course of teacher training. In each of these studies the student is introduced to the aims, scope, and various methods of teaching each syllabus. The section of the Reading, Spelling and Handwriting Syllabus Study devoted

to reading occupies 38 lecture hours.

#### Additional Reading Syllabus Study

This is a 22 lecture hour course taken by all third year students at the Christchurch Teachers' College and the gaining of a pass in the 'Reading Syllabus Study' is a prerequisite for this course. It is directed at the study of reading in the primary school.

#### Mathemagenic Behaviours

This term was coined by Rothkopf who defines these as

behaviors that give birth to learning. More specifically, the study of mathemagenic activities is the study of the student's actions that are relevant to the achievement of specified instructional objectives. (1970, p.325)

He reports that he derived the term from the Greek roots mathema (that which is learned) and gigesthesia (to be born).

#### Interactive Reading

This is reading where the reader carries out a continuous thoughtful dialogue with the information, ideas, opinions, principles and the like presented by the author. As he reads he is constantly challenging, accepting, rejecting, weighing and integrating the views expressed by the author. The reader consciously, constructively and intuitively forms new meanings in the light of what he is reading. Interactive reading is characterized by steady, vigorous and purposeful cognitive activity on the part of the reader.

### Purpose (in reading)

The term 'purpose' related to reading has many shades of meaning. Within the framework of this study the term 'purpose in reading' refers to questions or directions supplied by the teacher or constructed by the reader to provide the mental set for the act of study. They provide the framework through which the individual is helped to engage in various kinds of reading activity.

### Adjunct Questions and Directions

These are questions or directions of various kinds which are inserted in reading material adjacent to the section where the answers may be found. Depending on the instructions of the teacher, or, in a free reading situation, on the preference of the reader, the questions or directions may be read before or after the relevant material is read.

### Directed Reading

This is the practice of guiding and directing students' reading through the use of written questions or directions to be used in adjunct positions. To assist the student in determining the specific adjunct position for each question or direction, they may be accompanied by the page numbers which indicate the section of the textual material where the answers may be found. In using directed reading questions and directions the reader may be required to write out the answers or conclusions.

### Overt Response

This term usually refers to a response which involves some visible or audible action on the part of the learner. In this investigation it refers specifically to the recording of written responses by a reader to questions or directions presented to guide and direct his reading.

### Factual Questions

These are questions which require the reader to recognize or recall specific information given in a particular passage.

### Reasoning Questions

These are questions which require the reader to see relationships among facts, ideas and generalizations given and to arrive at an answer which is dependent upon the reader's own interpretation of the information and ideas presented by the author.

### Question-relevant

This refers to information in the reading material which is directly relevant to the questions employed to direct and guide the students' reading.

### Question-irrelevant

This refers to information in the reading material which is not directly relevant to the questions employed to direct and guide the students' reading. This may also be referred to as incidental information.

## BIBLIOGRAPHY

- Australian Council for Educational Research, Manual for the A.C.E.R. Advanced Tests AL and AQ, Victoria, Australian Council for Educational Research.
- Clark, M. L. (1958), Interim Manual for Co-operative Reading Comprehension Test, Form Y, Melbourne, Australian Council for Educational Research, 1958.
- Fox, D. J. (1969), The Research Process in Education, New York, Holt, Rinehart and Winston, 1969.
- Rothkopf, E. Z. (1970), The concept of mathemagenic activities, Review of Educational Research, Vol. 40, No. 3, 1970, pp. 325 - 336.
- Simpson, M. (1961), Suggestions for Teaching Reading in Infant Classes, Wellington, New Zealand Department of Education, 1961.
- Spache, G. D. and Spache, Evelyn B. (1969), Reading in the Elementary School, Second Edition, Boston, Allyn and Bacon, 1969.

## CHAPTER V

## THE ANALYSIS OF THE DATA

## Introduction

The reporting of the results has been divided into three main sections, two dealing with the experimental aspects of the investigation and one with the questionnaire data.

The results in the first experimental section deal with the facilitative effects of adjunct questions on learning and remembering when reading textual materials. The first series of results in this section relate to the investigation involving first, second and third year student groups reading textual materials using pre and post adjunct questions and directions of a factual kind, with the control groups being asked to 'read carefully'. The second series of results in this section relates to the investigation involving first year student groups reading textual materials using pre and post adjunct questions of both a factual and a reasoning kind, with the control groups being asked to 'read carefully'. The third series of results in this section relates to the part of the investigation which examined the interaction between question type (factual, reasoning) and question placement (pre, post). Figure 1.0 is a diagrammatic illustration of the first experimental section.

The results in the second experimental section deal with the 'reading improvement' part of the investigation. Here, any improvement in the reading abilities of those students who took the Reading Syllabus Study during their first year at



FIGURE 1.0

## DESIGN FOR EXPERIMENTAL SECTION I : FIRST, SECOND AND THIRD SERIES

Type of Direction Given for Reading	First Years	Second Years	Third Years	To- tals
Post Factual Adjunct Questions	Post Factual n=27	Post Factual n=23	Post Factual n=37	87
Pre Factual Adjunct Questions	Pre Factual n=23	Pre Factual n=27	Pre Factual n=41	91
Read Carefully	Read Carefully n=26	Read Carefully n=24	Read Carefully n=36	86
TOTAL n	76	74	114	264
Post Reasoning Adjunct Questions	Post Reasoning n=26	* The Read Carefully First Year Groups were combined when the results were analysed for the second and third series of experiments		
Pre Reasoning Adjunct Questions	Pre Reasoning n=23			
Read Carefully	Read Carefully n=26			
TOTAL n	75			
TOTAL (First Years)	151			

Total n = 339

teachers' college, is compared with any improvement in the reading abilities of those students who did not take this course during their first year at college.

For each of the two experimental sections it is proposed to report the results in table and graph form, commenting briefly on these, and then to report the hypotheses as they relate to each series of experiments.

The third and final section (the survey section) will report the results of two questionnaires which are relevant to the experimental sections of this investigation.

- A. Experimental Section I: The facilitative effects of adjunct questions on learning and remembering when reading textual materials.

For this experimental section the criterion scores consist of the various post test scores corrected for student ability and achievement. This was done by correlating measures of intelligence, reading ability and college achievement (in Education and English courses) with post test scores for all students in the sample ( $n=339$ ), determining for each student that amount of the post test score which is unrelated to his ability (his residual score). All analyses of variance in the subsequent series of experiments have been carried out with these residual scores as the criterion, except where the total post test criterion scores have also been corrected for the time taken by each student to read the textual materials required for the experiment.

The means, standard deviations, intercorrelations and multiple correlations of the ability and achievement measures with the three post test and the total post test scores are reported in Tables 1.1, 1.2, 1.3 and 1.4. A summary of the means and standard deviations for the predictor variables for all the treatment groups is reported in the appendices.

The multiple regression analysis to determine residual scores on the time taken for the reading task was calculated using the same procedure as outlined above, and this is reported in Table 1.5. Table 1.6 includes the Total Post Test Score in which the time taken for the reading task has been entered as one of the predictor variables.

TABLE 1.1

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE FIRST POST TEST SCORES

Variable	Means	SD	Correlation with Post Test Achievement
AL	14.99705	4.27554	0.36017
AQ	10.07670	4.31860	0.26052
Vocabulary	56.94099	7.45488	0.27711
Speed	53.70500	6.40221	0.24637
Comprehension	55.58701	5.83239	0.32226
College Achievement	9.79351	3.45791	0.33225
First Post Test Achievement	17.22418	3.41634	
Multiple Linear Correlation			0.50684

TABLE 1.2

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE SECOND POST TEST SCORES

Variable	Mean	SD	Correlation with Post Test Achievement
AL	14.99705	4.27554	0.11613
AQ	10.07670	4.31860	0.10146
Vocabulary	56.94099	7.45488	0.06442
Speed	53.70500	6.40211	0.15997
Comprehension	55.58701	5.83239	0.18621
College Achievement	9.79351	3.45791	0.27415
Second Post Test Achievement	13.77286	5.87368	
Multiple Linear Correlation			0.33821

TABLE 1.3

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE THIRD POST TEST SCORES

Variable	Mean	SD	Correlation with Post Test Achievement
AL	14.99705	4.27554	0.30618
AQ	10.07670	4.31860	0.25173
Vocabulary	56.94099	7.45488	0.26001
Speed	53.70500	6.40221	0.27733
Comprehension	55.58701	5.83239	0.34587
College Achievement	9.79351	3.45791	0.23525
Third Post Test Achievement	14.27729	3.08552	
Multiple Linear Correlation	0.44313		

TABLE 1.4

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE TOTAL POST TEST SCORES NOT CORRECTED  
FOR TIME

Variable	Mean	SD	Correlation with Total Post Test Achievement
AL	14.99705	4.27554	0.28176
AQ	10.07670	4.31860	0.22962
Vocabulary	56.94099	7.45488	0.21041
Speed	53.70500	6.40221	0.26679
Comprehension	55.58701	5.83239	0.32916
College Achievement	9.79351	3.45791	0.35220
Total Post Test Achievement	45.18584	9.81648	
Multiple Linear Correlation	0.49064		

TABLE 1.5

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE TIME TAKEN FOR READING

Variable	Mean	SD	Correlation with Reading Time
AL (I.Q.Raw Score)	14.99705	4.27554	0.09073
AQ (I.Q.Raw Score)	10.07670	4.31860	0.12974
Vocabulary	56.94099	7.45488	0.01228
Speed	53.70500	6.40221	0.04786
Comprehension	55.58701	5.83239	0.04024
College Achievement	9.79351	3.45791	0.09174
Reading Time	72.23894	23.00119	
Multiple Linear Correlation		0.20592	

TABLE 1.6

MULTIPLE REGRESSION : MULTIPLE CORRELATION OF PREDICTOR VARIABLES WITH  
THE TOTAL POST TEST SCORES CORRECTED FOR READING TIME

Variable	Mean	SD	Correlation with Total Post Test Achievement (Corrected for Reading Time)
AL	14.99705	4.27554	0.28176
AQ	10.07670	4.31860	0.22962
Vocabulary	56.94099	7.45488	0.21041
Speed	53.70500	6.40221	0.26679
Comprehension	55.58701	5.83239	0.32916
College Achievement	9.79351	3.45791	0.35220
Reading Time	72.23894	23.00119	0.20587
Total Post Test Score	45.18584	9.81648	
Multiple Linear Correlation		0.52643	

1. First Series: First, second and third year students reading textual materials using pre or post factual questions or being directed to read carefully.

For the first series of experiments the data is analysed using a factorial design in a  $3 \times 3$  analysis of variance. The first factor is year (first, second, third), and the second factor is reading treatment (post factual, pre factual, read carefully). The results are reported in both table and graph form.

Tables 2.1, 2.2, 2.3 and 2.4 (Figures 2.1, 2.2, 2.3 and 2.4) show the analysis of variance for the first, second, third and total post test scores, corrected for all predictor variables except time taken. It can be seen from these tables that there is a significant effect for year and treatment in the first, second and total post test scores, but for the third post test, the significant effect is present for year only.

Table 2.5 (Figure 2.5) shows the analysis of variance for time taken for the reading task. It can be seen that there is a significant effect for both year and treatment.

Table 2.6 (Figure 2.6) shows the analysis of variance for the total post test scores, corrected for all predictor variables including time taken for the reading task. It can be seen that there is a significant effect for year but not for treatment.

Figure 2.7 is a combination of the treatment effect graphs of Figures 2.4 and 2.6 and shows the residual mean achievement

scores for the total post test scores uncorrected and corrected for the effects of time. It can be seen that once the total post test scores are corrected for time taken for the reading, the significance of the treatment effect is lost.

Figure 2.8 is a combination of the year effect graphs of Figures 2.4 and 2.6 and shows the residual mean achievement scores for the year effect on the total post test scores, uncorrected and corrected for the effects of time. It can be seen that the year effect is significant in both cases.



TABLE 2.1

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST POST TEST (SHORT TERM RETENTION, OBJECTIVE-TYPE TEST) FOR THE FIRST, SECOND AND THIRD YEAR STUDENTS

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	7.919	263		
Between	21.994	8		
Year	35.534	2	4.7520	0.009
Treatment	26.917	2	3.5997	0.027
Year X Treatment Interaction	12.762	4	1.7067	0.147
Total Within	7.478	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			
	Post Factual	Pre Factual	Read Carefully	Total
First	0.4051	-1.5090	-0.2818	-0.4619
Second	0.4500	-0.3861	0.6749	0.2463
Third	1.5597	0.9412	0.0038	0.8349
Total	0.8050	-0.3180	0.1323	

3. Individual Comparisons Between Groups

Standard error of the difference = 0.4123

Minimum difference significant at  $p < .05 = (0.4123) \cdot (1.93)$   
= 0.7958

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	1.123	Sig.
2. Post Factual vs Read Carefully	0.6727	NS
3. Pre Factual vs Read Carefully	-0.4503	NS

FIGURE 2.1

RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST POST TEST (SHORT TERM RETENTION, OBJECTIVE-TYPE TEST) FOR THE EFFECTS OF YEAR AND TREATMENT

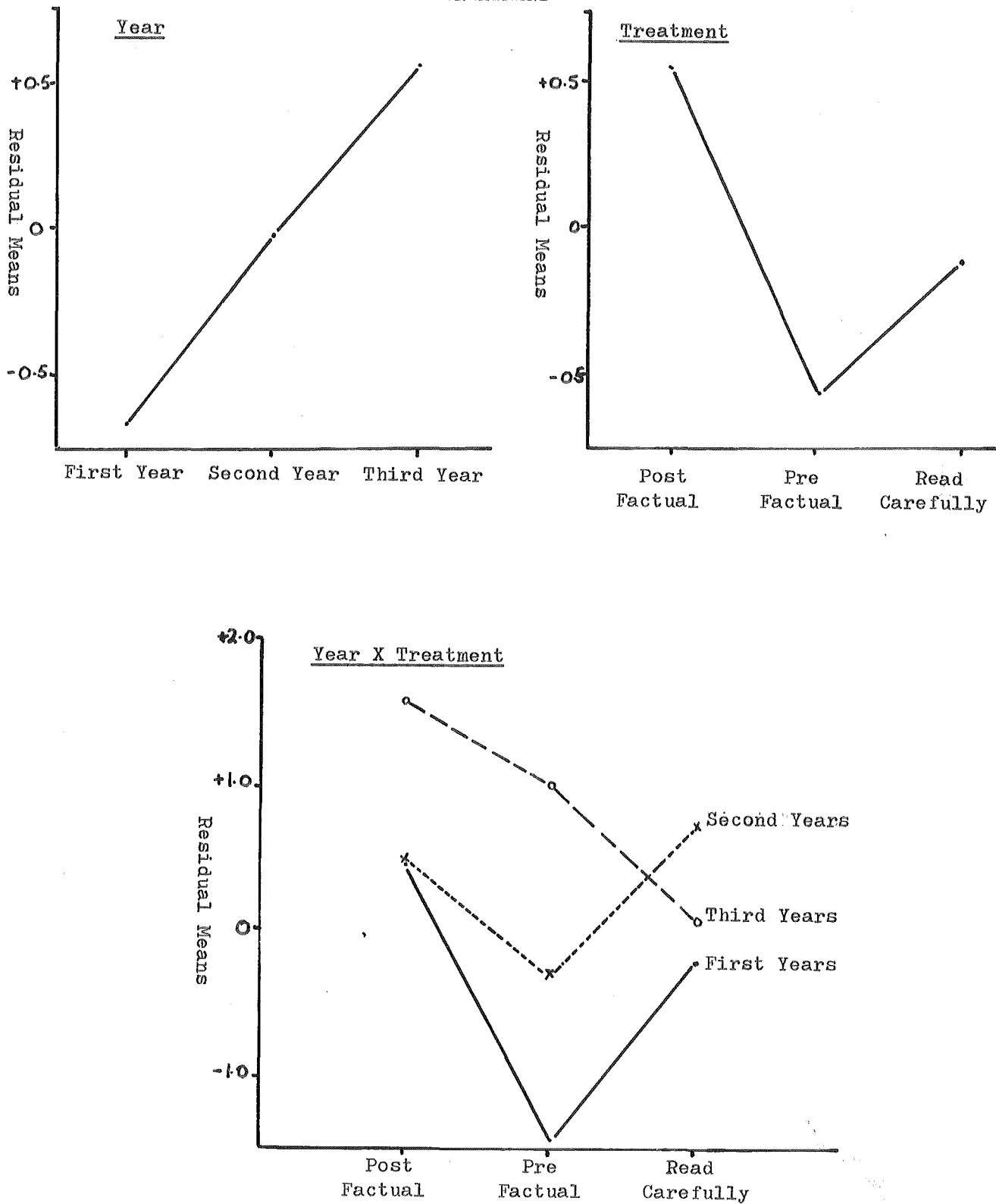


TABLE 2.2

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE SECOND POST TEST (LONG TERM RETENTION, ESSAY TYPE) FOR FIRST, SECOND AND THIRD YEAR STUDENTS

1. ANOVA

Source of Variance	MS	df	F Ratio	p.Value
Total	28.708	263		
Between	82.567	8		
Year	130.400	2	4.8264	0.009
Treatment	105.435	2	3.9024	0.021
Year X Treatment Interaction	47.217	4	1.7476	0.139
Total Within	27.018	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			Total
	Post Factual	Pre Factual	Read Carefully	
First	1.2128	0.3904	-1.9142	-0.1037
Second	-2.1592	-1.3284	-1.7951	-1.7609
Third	3.0236	-0.0822	-0.9179	0.6745
Total	0.6924	-0.3401	-1.5424	

3. Individual Comparisons Between Groups

Standard error of the difference = 0.7836  
 Minimum difference significant at  $p = < .05 = (0.7836) \cdot (1.93)$   
 = 1.5124

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	1.0325	NS
2. Post Factual vs Read Carefully	2.2348	Sig.
3. Pre Factual vs Read Carefully	1.2023	NS

FIGURE 2.2

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE SECOND POST TEST (LONG TERM RETENTION, ESSAY TYPE)  
FOR THE EFFECTS OF YEAR AND TREATMENT

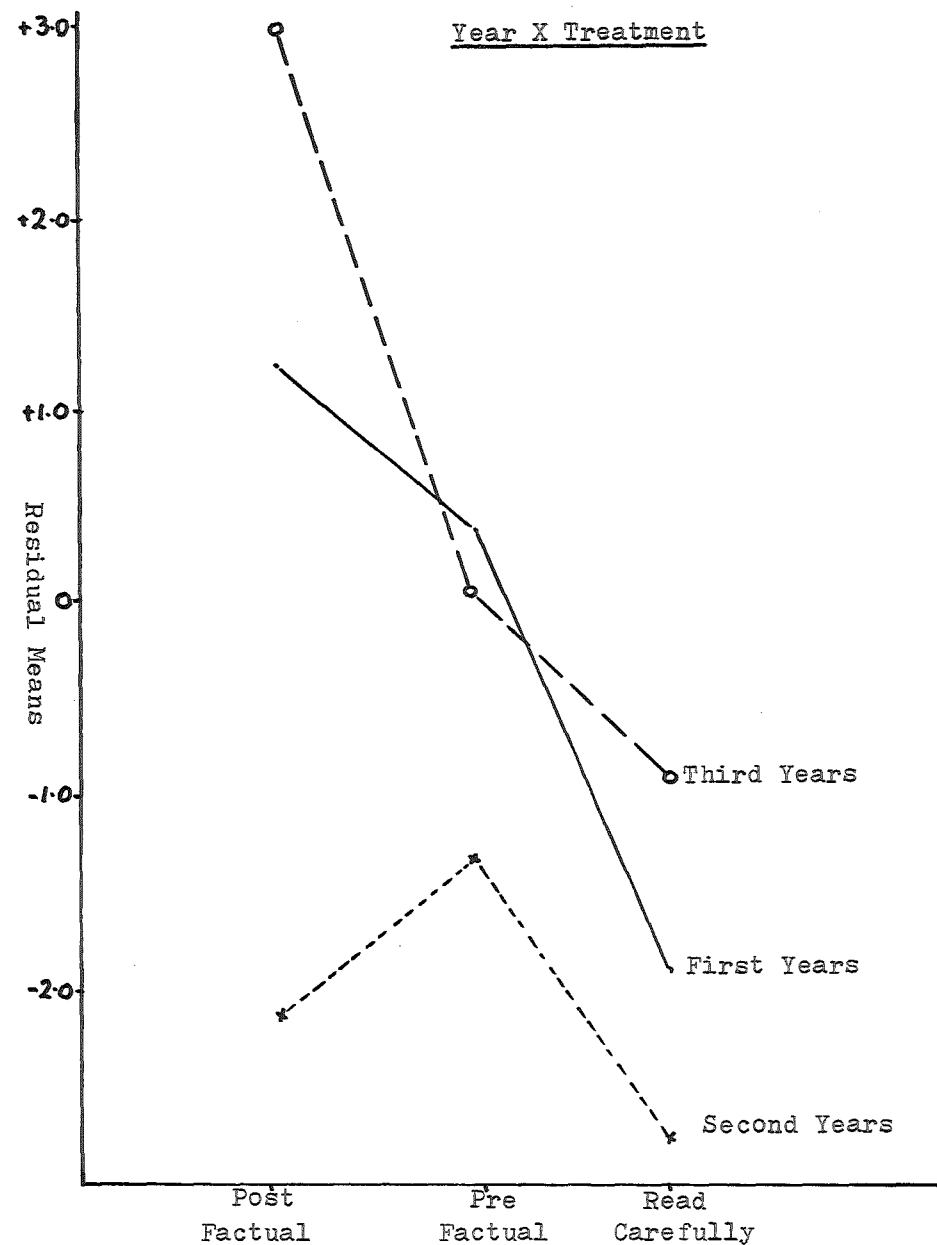
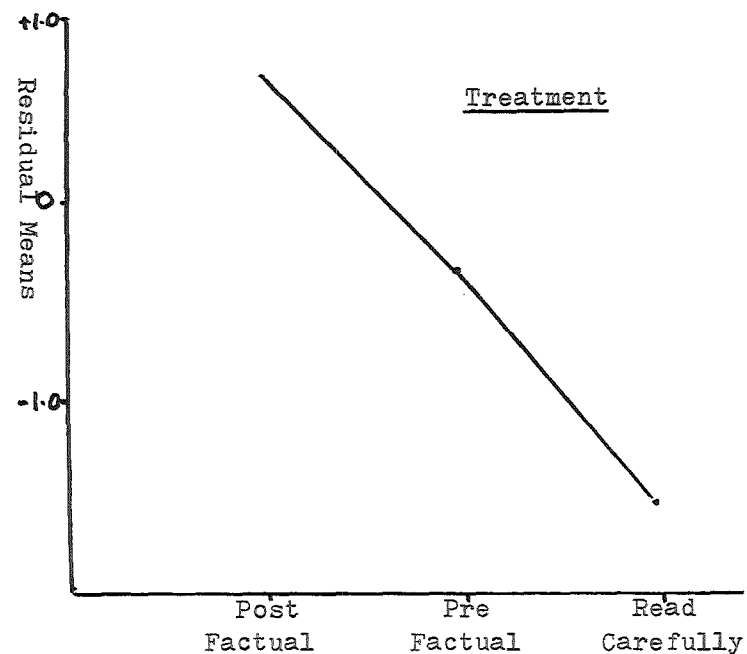
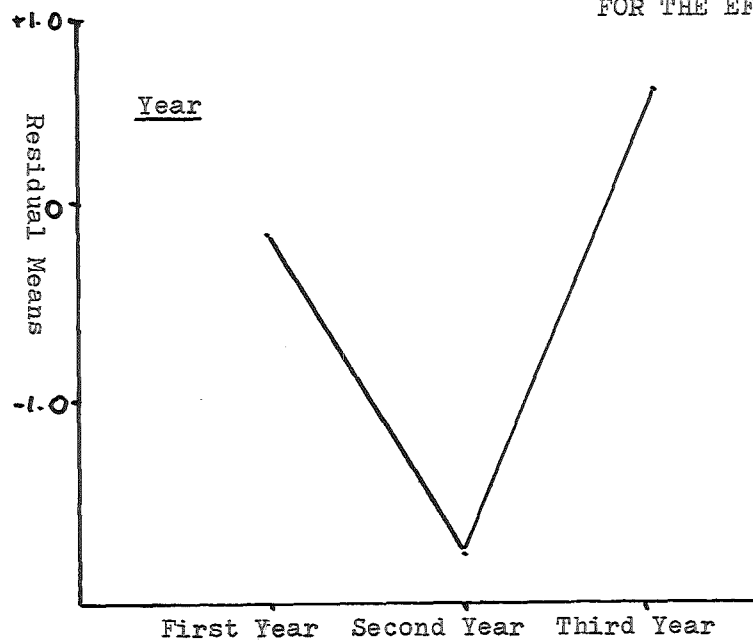


TABLE 2.3

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE THIRD POST TEST (LONG TERM RETENTION, OBJECTIVE-TYPE TEST) FOR FIRST, SECOND AND THIRD YEAR STUDENTS

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	7.173	263		
Between	14.064	8		
Year	21.201	2	3.0475	0.047
Treatment	14.393	2	2.0689	0.126
Year X Treatment Interaction	10.332	4	1.4851	0.205
Total Within	6.957	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			
	Post Factual	Pre Factual	Read Carefully	Total
First	0.4240	-0.1241	-0.2496	0.0168
Second	-0.7931	-0.5077	-0.6319	-0.6443
Third	0.6469	1.2000	-0.8280	0.3396
Total	0.0926	0.1894	-0.5698	

3. Individual Comparisons Between Groups

Standard error of the difference = 0.3976

Minimum difference significant at  $p < .05 = (0.3976) \cdot (1.92)$   
 = 0.7674

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	-0.0968	NS
2. Post Factual vs Read Carefully	0.6624	NS
3. Pre Factual vs Read Carefully	0.7592	NS (Border-line).

FIGURE 2.3

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE THIRD POST TEST (LONG TERM RETENTION, OBJECTIVE-TYPE) FOR THE EFFECTS OF YEAR AND TREATMENT

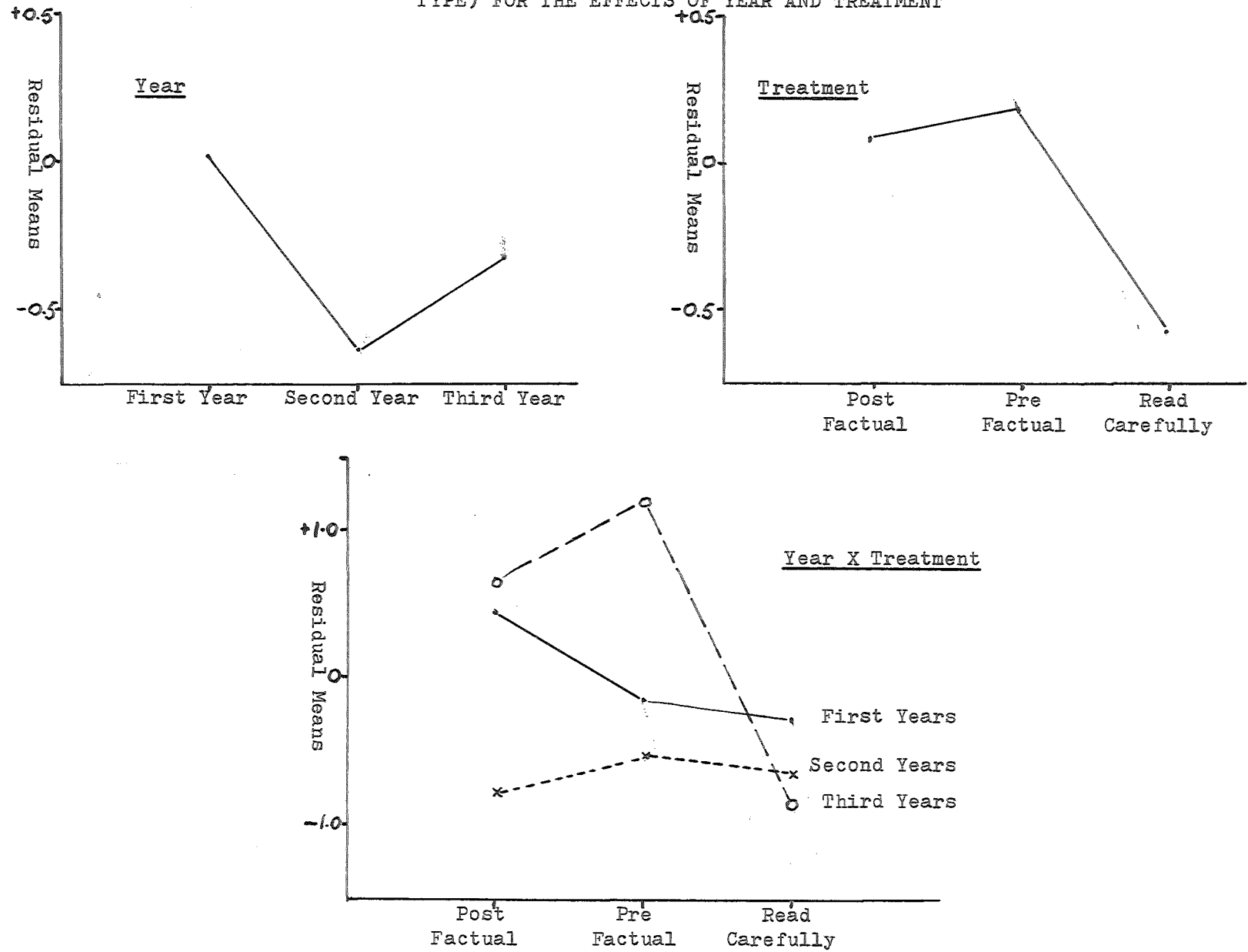


TABLE 2.4

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS FOR  
THE EFFECTS OF YEAR AND TREATMENT NOT CORRECTED FOR TIME

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	66.668	263		
Between	207.795	8		
Year	330.907	2	5.3166	0.006
Treatment	278.691	2	4.4776	0.012
Year X Treatment Interaction	110.791	4	1.7800	0.132
Total Within	62.240	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			Total
	Post Factual	Pre Factual	Read Carefully	
First	2.1819	-1.1373	-2.7495	-0.5683
Second	-2.4365	-2.2831	-1.6667	-2.1288
Third	5.0462	2.0424	-1.6700	1.8062
Total	1.5972	-0.4593	-2.0288	

3. Individual Comparisons Between Groups

Standard error of the difference = 1.1893

Minimum difference significant at  $p < .05 = (1.1893) \cdot (1.93)$   
= 2.2954

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	2.0565	NS
2. Post Factual vs Read Carefully	3.626	Sig.
3. Pre Factual vs Read Carefully	1.5695	NS

FIGURE 2.4

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS FOR THE EFFECTS OF YEAR AND TREATMENT  
NOT CORRECTED FOR TIME

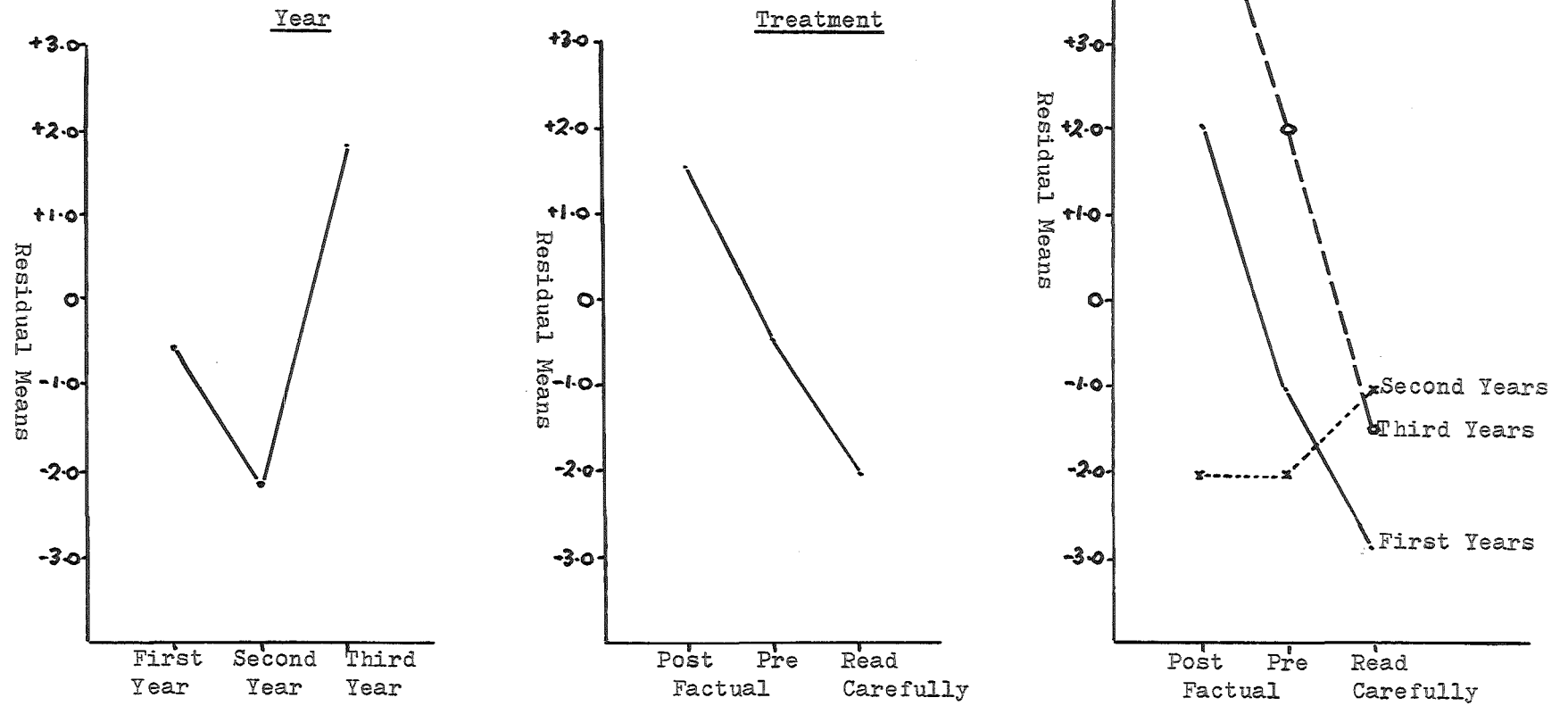




TABLE 2.5

ANALYSIS OF RESIDUAL SCORES OF TIME TAKEN FOR READING BY FIRST, SECOND  
AND THIRD YEAR STUDENTS USING THREE DIFFERENT METHODS OF DIRECTING  
READING OF TEXTUAL MATERIALS

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	177.955	263		
Between	3247.336	8		
Year	2323.488	2	28.4530	0.000
Treatment	10309.441	2	126.2476	0.000
Year X Treatment Interaction	178.206	4	2.1823	0.070
Total Within	81.660	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			Total
	Post Factual	Pre Factual	Read Carefully	
First	11.7435	0.8762	- 8.8210	1.2662
Second	8.4019	-10.6438	-15.4197	-5.8872
Third	1.6036	- 8.6727	-19.8355	-8.9682
Total	7.2497	-6.1467	-14.6921	

3. Individual Comparisons Between Groups

Standard error of the difference = 1.3623

Minimum difference significant at  $p = < .05 = (1.3623) \cdot (1.93)$   
= 2.6293

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	13.3964	Sig.
2. Post Factual vs Read Carefully	21.9418	Sig.
3. Pre Factual vs Read Carefully	8.5454	Sig.

FIGURE 2.5

RESIDUAL SCORES FOR TIME TAKEN BY FIRST, SECOND,  
AND THIRD YEAR STUDENTS WHEN USING THREE  
METHODS OF DIRECTING READING OF TEXTUAL  
MATERIALS.

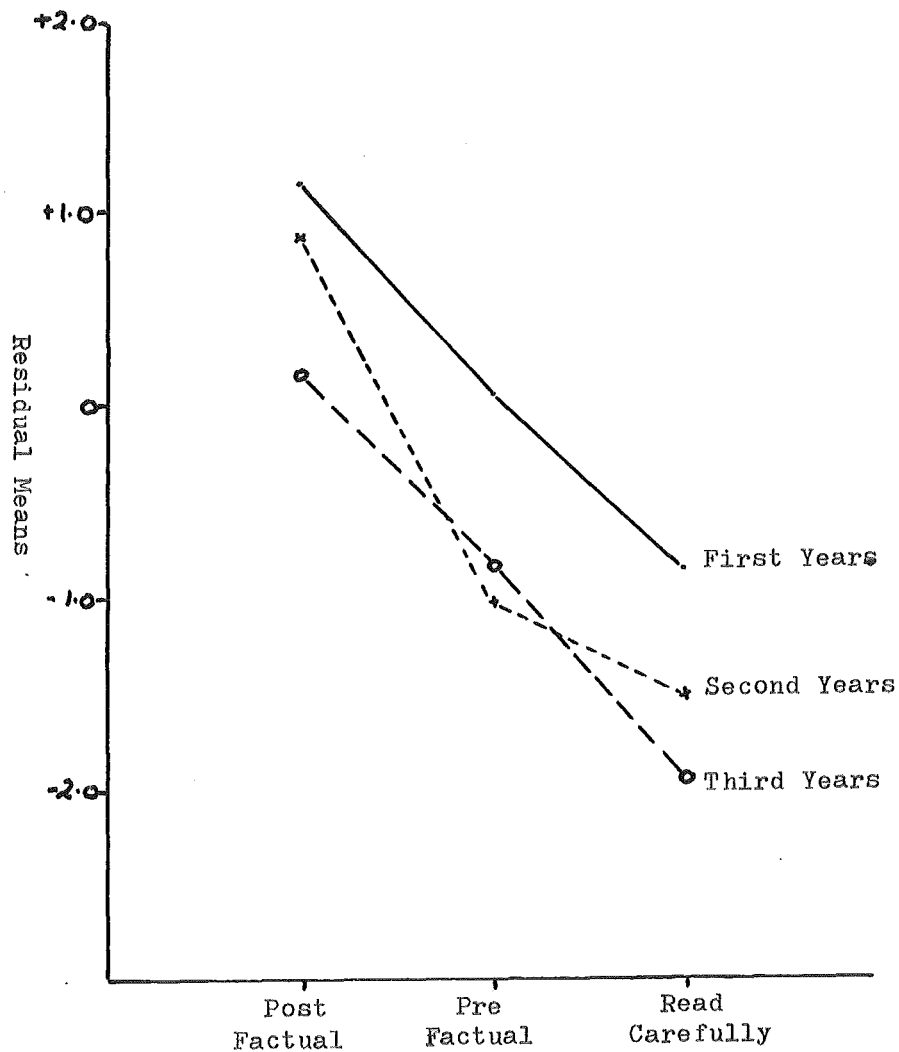


TABLE 2.6

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS FOR  
THE EFFECTS OF YEAR AND TREATMENT CORRECTED FOR TIME

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	65.576	263		
Between	177.794	8		
Year	406.045	2	6.5433	0.002
Treatment	68.342	2	1.1013	0.335 NS
Year X Treatment Interaction	118.394	4	1.9079	0.109 NS
Total Within	62.055	255		

2. Means of Residual Scores for all Effects

Year	<u>Treatment</u>			
	Post Factual	Pre Factual	Read Carefully	Total
First	1.2048	-1.2102	-2.0156	-0.6737
Second	-3.1356	-1.3975	-0.3838	-1.6389
Third	4.9128	2.7640	-0.0196	2.5524
Total	0.9940	0.0521	-0.8063	

3. Individual Comparisons Between Groups

Standard error of the difference = 1.1876  
 Minimum difference significant at  $p < .05 = (1.1876) \cdot (1.93)$   
 = 2.2920

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Pre Factual	0.9419	NS
2. Post Factual vs Read Carefully	1.8003	NS
3. Pre Factual vs Read Carefully	0.7542	NS

FIGURE 2.6

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS, FOR THE EFFECTS OF YEAR AND TREATMENT  
CORRECTED FOR TIME

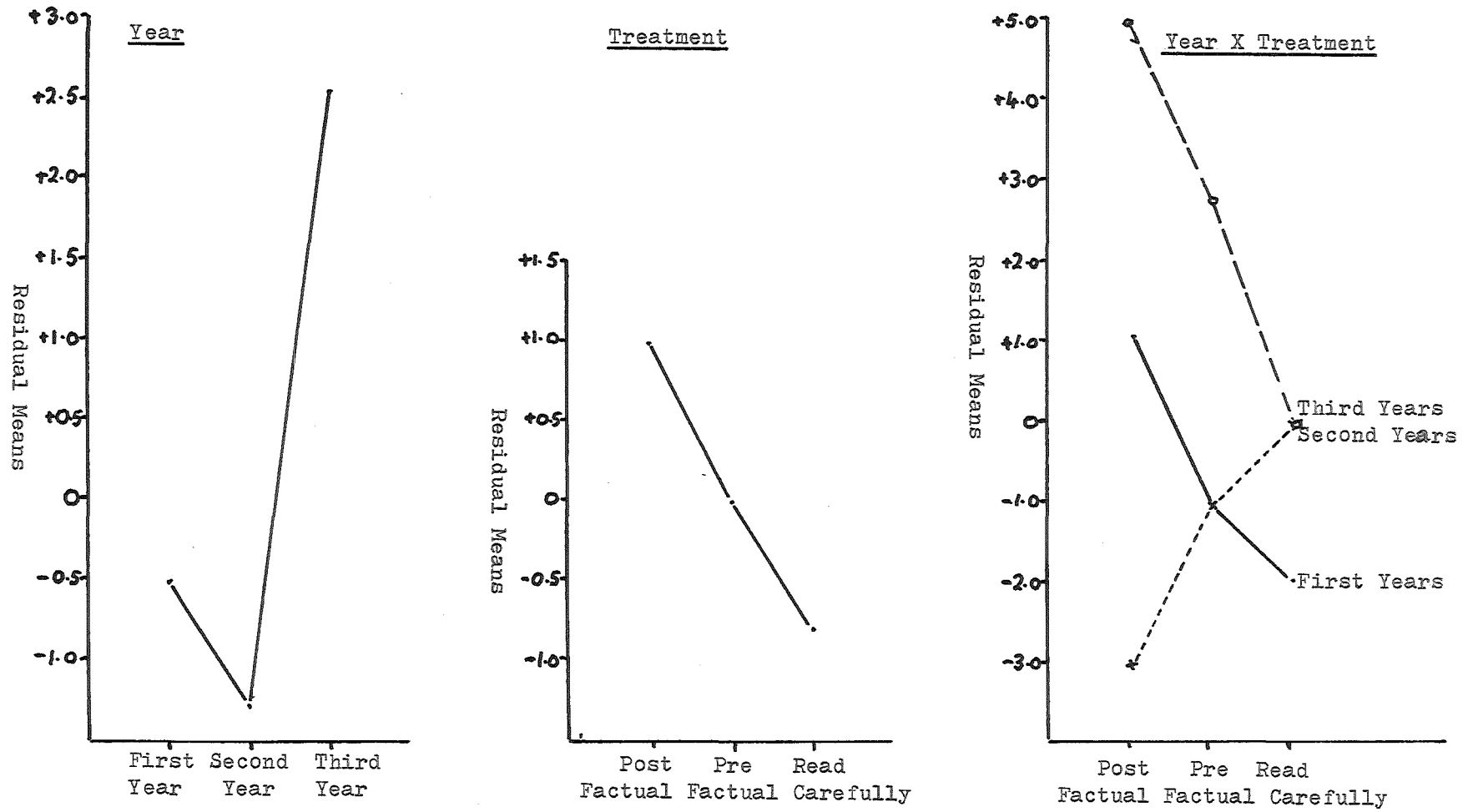


FIGURE 2.7

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL  
POST TESTS NOT CORRECTED AND CORRECTED FOR  
TIME:TREATMENT EFFECT

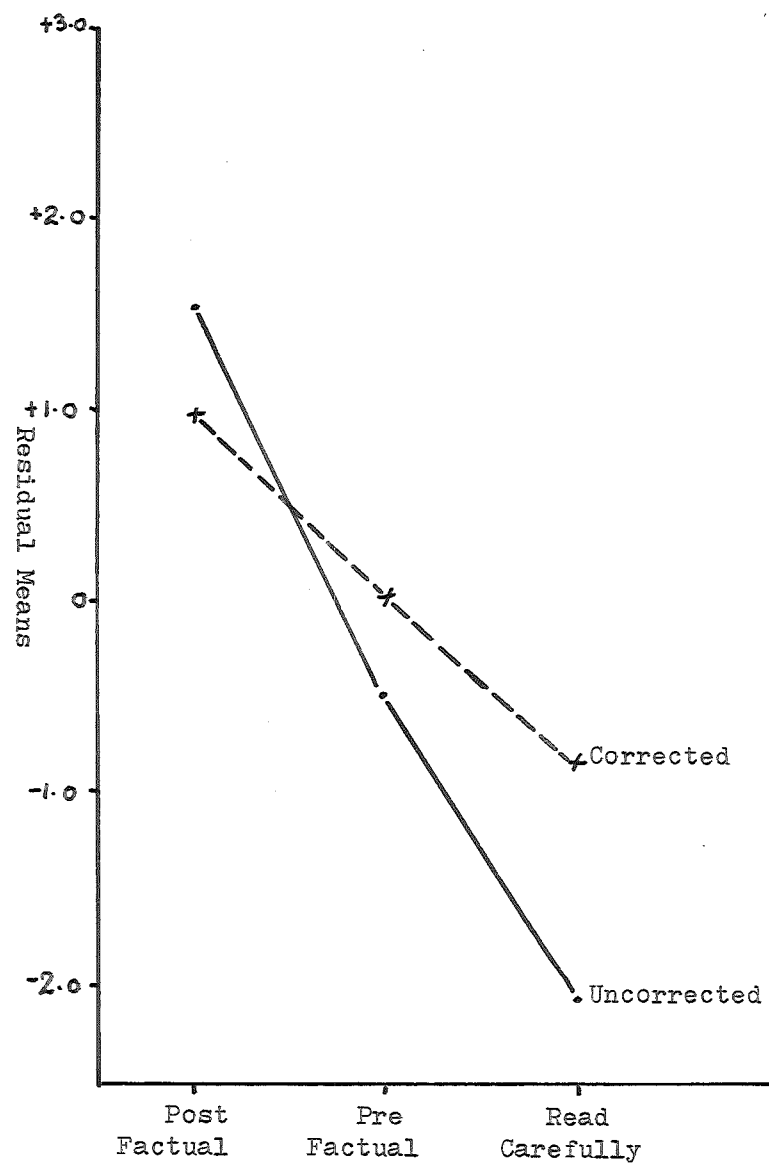
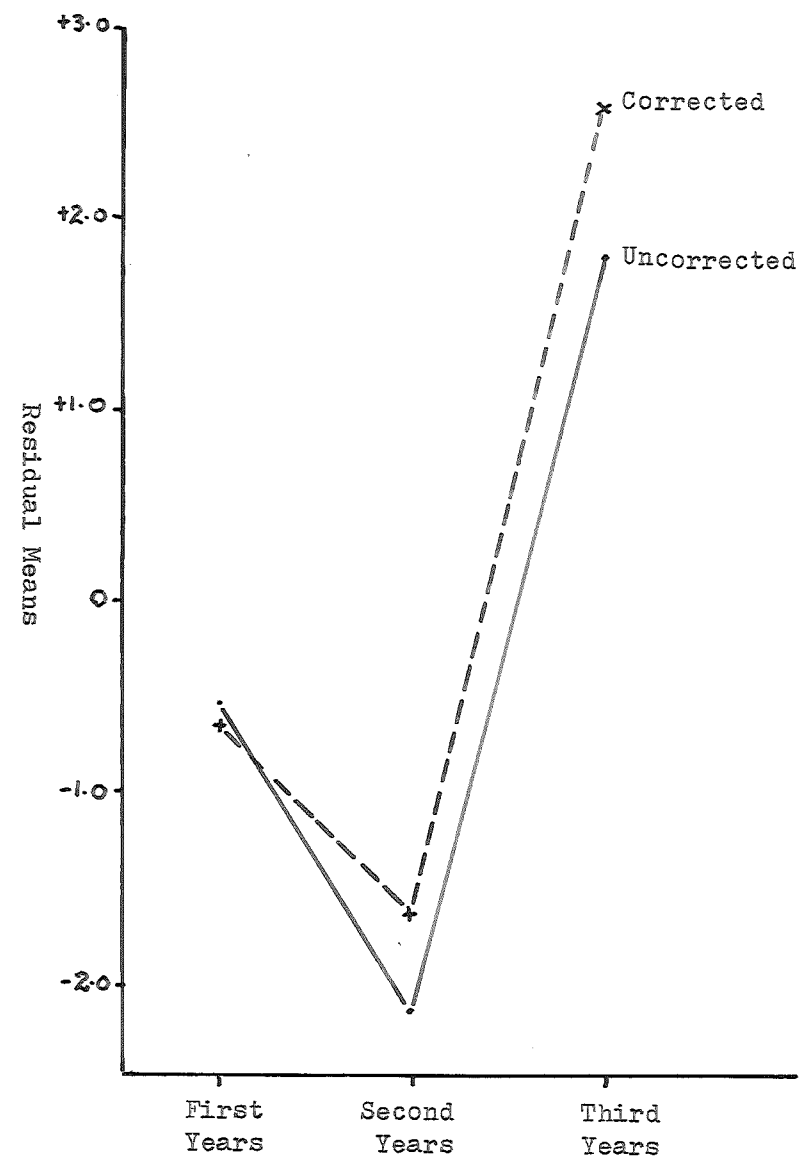


FIGURE 2.8

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL  
POST TESTS NOT CORRECTED AND CORRECTED FOR  
TIME:YEAR EFFECT



### Hypothesis 1(a).

Hypothesis one (a) stated that pre factual groups would have significantly higher corrected post test achievement scores than those achieved by the groups directed to read carefully. The analysis of variance summaries and the individual comparisons between groups made using residual post test achievement scores presented in Tables and Figures 2.1, 2.2, 2.3, 2.4 and 2.6 show that the hypothesis is not supported, although the comparison recorded in Table 2.3 (Third Post Test) could be classified as borderline.

### Hypothesis 1(b).

Hypothesis one (b) stated that post factual groups would have significantly higher corrected post test achievement scores than those achieved by the groups directed to read carefully. The analysis of variance summaries and the individual comparisons between groups made using residual post test achievement scores presented in Tables and Figures 2.2 and 2.4 show that this hypothesis is supported. The comparison reported for the total post tests not corrected for time (Table 2.4) could be classified as highly significant.

Tables and Figures 2.1, 2.3 and 2.6 show that, on the first and third post tests and the total post tests corrected for the effects of time, the hypothesis is not tenable, although the effects are all in the predicted direction.

### Hypothesis 2(a).

Hypothesis two (a) states that the groups directed to read carefully would take significantly less time to complete their

reading task than those groups directed to read with adjunct questions.

#### Hypothesis 2(b).

Hypothesis two (b) states that the groups directed to read with post factual questions would take significantly longer time to complete their reading task than those groups directed to read with pre factual questions.

Table and Figure 2.5 present the analysis of variance summary and the individual comparisons between groups obtained when the reading time for those groups using pre or post factual questions and the groups directed to read carefully were compared. The table and figure show that both hypotheses are supported at a highly significant level with those groups using post factual questions taking significantly longer to read than those groups using pre factual questions, and the read carefully groups taking significantly less time to complete the reading task than either of the question guided groups.

#### Hypothesis 3.

Hypothesis three stated that the post factual group would have significantly higher corrected achievement scores on the second, third and total post test scores (not corrected for time) than those achieved by the pre factual group. Tables and Figures 2.2, 2.3 and 2.4 show that the hypothesis is not supported, although for the second and total post test results the treatment effect is clearly in the predicted direction.

2. Second Series: First year students reading textual materials using pre or post adjunct questions of a factual or reasoning kind with a control group being directed to read carefully.

For the second series of experiments the data was analysed using a one way analysis of variance factorial design. For the purpose of comparing the effects of each of the four treatment groups with the control group and with each other, the test procedure used was the one developed by Dunnett (1955) and outlined in Edwards (1960, pp. 152-4). The results are reported in table and graph form and all the comparisons have been calculated with the minimum difference significant at  $p < .05$ .

The analysis of the residual achievement scores for the first, second, third and total post test scores, uncorrected for time, are shown in Tables 3.1, 3.2, 3.3 and 3.4 (Figures 3.1, 3.2, 3.3 and 3.4). The analysis of the residual achievement scores for the total post tests, corrected for time, are reported in Table 3.5 (Figure 3.5).

It can be seen that for the first post test (Table 3.1, Figure 3.1) there is no significant difference between the effects of any of the treatments.

On the second post test (Table 3.2, Figure 3.2) it can be seen that there is a significant effect for all the experimental treatments over the control treatment. It can also be seen that there is a significant effect for the pre reasoning treatment over both the post reasoning and pre factual treatments.



Table 3.3 (Figure 3.3) shows the analysis of variance and the individual comparisons between groups for the results on the third post test. It can be seen that there is a significant effect for the pre reasoning treatment over both the control and post reasoning treatments.

Table 3.4 (Figure 3.4) shows the analysis of variance and the individual comparisons between groups for the total post test scores, uncorrected for the effects of time. It can be seen that there is a significant effect for the post factual, post reasoning, and pre reasoning treatments over control. It can be seen also that there is a significant effect for the pre reasoning treatment over the pre factual and post reasoning treatments.

Table 3.5 (Figure 3.5) shows the analysis of variance and individual comparisons between groups for the total post test scores, corrected for the effects of time. It can be seen that there is a significant effect for the pre reasoning treatment over both the control and post reasoning treatments and that there is a borderline effect for the post factual over the post reasoning treatment.

#### Hypothesis 4(a).

Hypothesis four (a) stated that the mean achievement scores of the pre reasoning group would be significantly higher on the second, third and total post test scores, not corrected and corrected for time, when compared with the mean achievement scores of the read carefully group. Tables and Figures 3.2,

TABLE 3.1

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST POST TEST (SHORT  
TERM RETENTION, OBJECTIVE - TYPE TEST ) FOR FIRST YEAR STUDENTS

## 1. ANOVA

Source of Variance	MS	df	F Ratio	p
Total	<u>1289.59832</u>			
	150	150		
Between groups	33.17545	4	4.18673	<.05
Within groups	7.92395	146		

## 2. Mean Residual Scores for Five Groups

	Mean	N
1. Post Factual	0.40514	27
2. Pre Factual	-1.50905	23
3. Post Reasoning	-0.22539	26
4. Pre Reasoning	0.29730	23
5. Control ( Read Carefully )	-1.72620	52

## 3. Individual Comparisons Between Groups

Standard error of the difference = 1.48117

Minimum difference significant at  $p < .05 = (1.48117) \cdot (2.18)$

= 3.24203

Comparisons	Difference	Significance
1. Post Factual vs Control	2.13134	NS
2. Pre Factual vs Control	0.21315	NS
3. Post Reasoning vs Control	1.50081	NS
4. Pre Reasoning vs Control	2.02350	NS
5. Post Factual vs Pre Factual	1.91419	NS
6. Post Factual vs Post Reasoning	0.63053	NS

FIGURE 3.1

RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST POST TEST (SHORT TERM  
RETENTION, OBJECTIVE-TYPE ) FOR FIRST YEAR STUDENTS

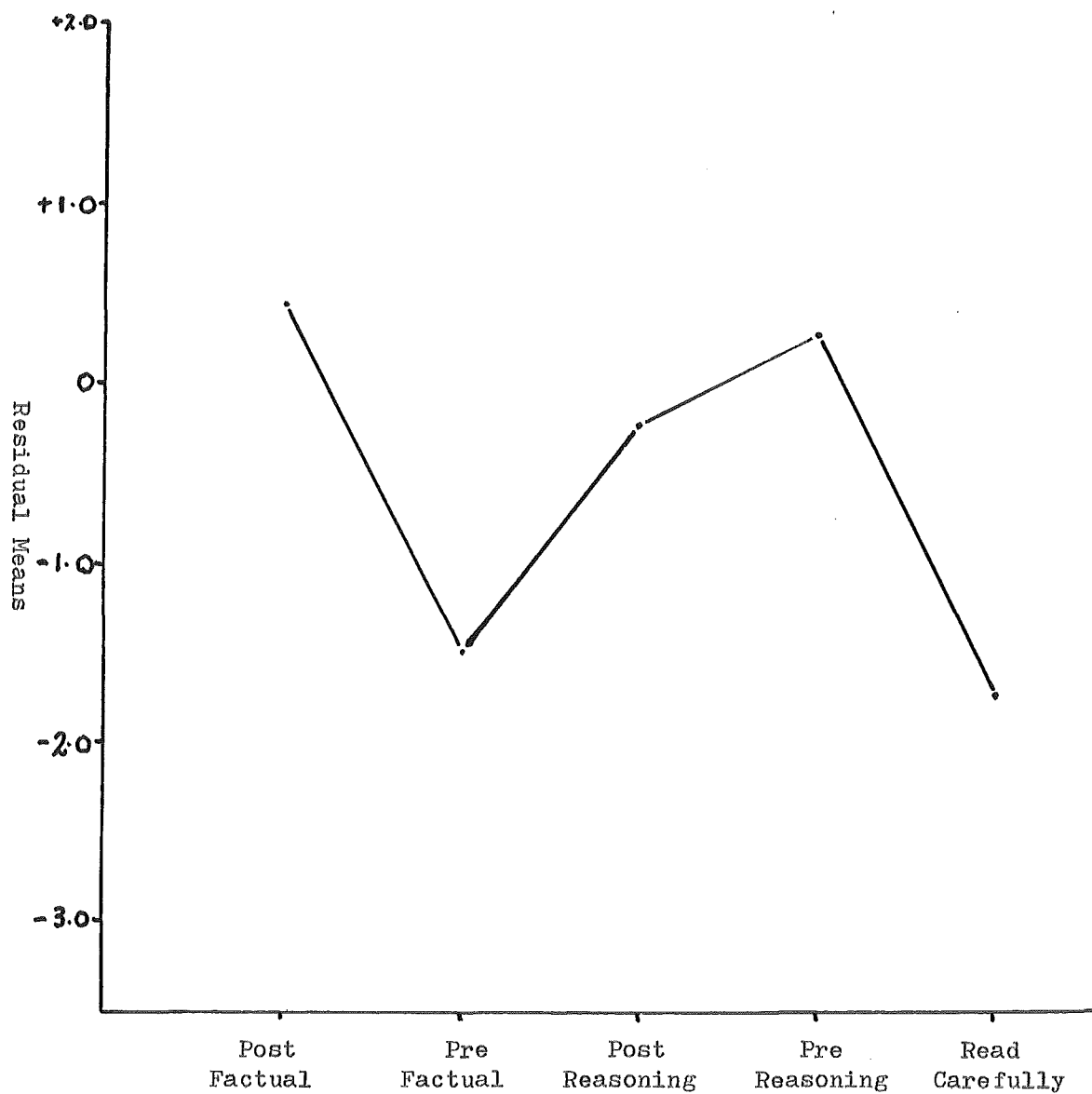


TABLE 3.2

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR SECOND POST TEST ( LONG  
TERM RETENTION, ESSAY TYPE ) FOR FIRST YEAR STUDENTS

## 1. ANOVA

Source of Variance	MS	df	F Ratio	p
Total	<u>5193.08189</u> 150	150	4.51967	<.05
Between groups	143.04730	4		
Within groups	31.64995	146		

## 2. Mean Residual Scores for Five Groups

	Mean	N
1. Post Factual	1.21281	27
2. Pre Factual	0.39036	23
3. Post Reasoning	0.68168	26
4. Pre Reasoning	3.93222	23
5. Control (Read Carefully)	-3.39070	52

## 3. Individual Comparisons Between Groups

Standard error of the difference = 1.45258  
 Minimum difference significant at  $p = < .05 = (1.45258) \cdot (2.18)$   
 = 3.16662

Comparisons	Difference	Significance
1. Post Factual vs Control	4.60351	Sig.
2. Pre Factual vs Control	3.78106	Sig.
3. Post Reasoning vs Control	4.07238	Sig.
4. Pre Reasoning vs Control	7.32292	Sig.
5. Post Factual vs Pre Factual	0.92245	NS
6. Pre Reasoning vs Post Reasoning	3.25054	Sig.
7. Pre Reasoning vs Post Factual	2.71941	NS
8. Pre Reasoning vs Pre Factual	3.54186	Sig.
9. Post Factual vs Post Reasoning	0.53113	NS
10. Post Reasoning vs Pre Factual	0.29132	NS

FIGURE 3.2

RESIDUAL ACHIEVEMENT SCORES FOR THE SECOND POST TEST (LONG TERM RETENTION, ESSAY TYPE TEST) FOR FIRST YEAR STUDENTS.

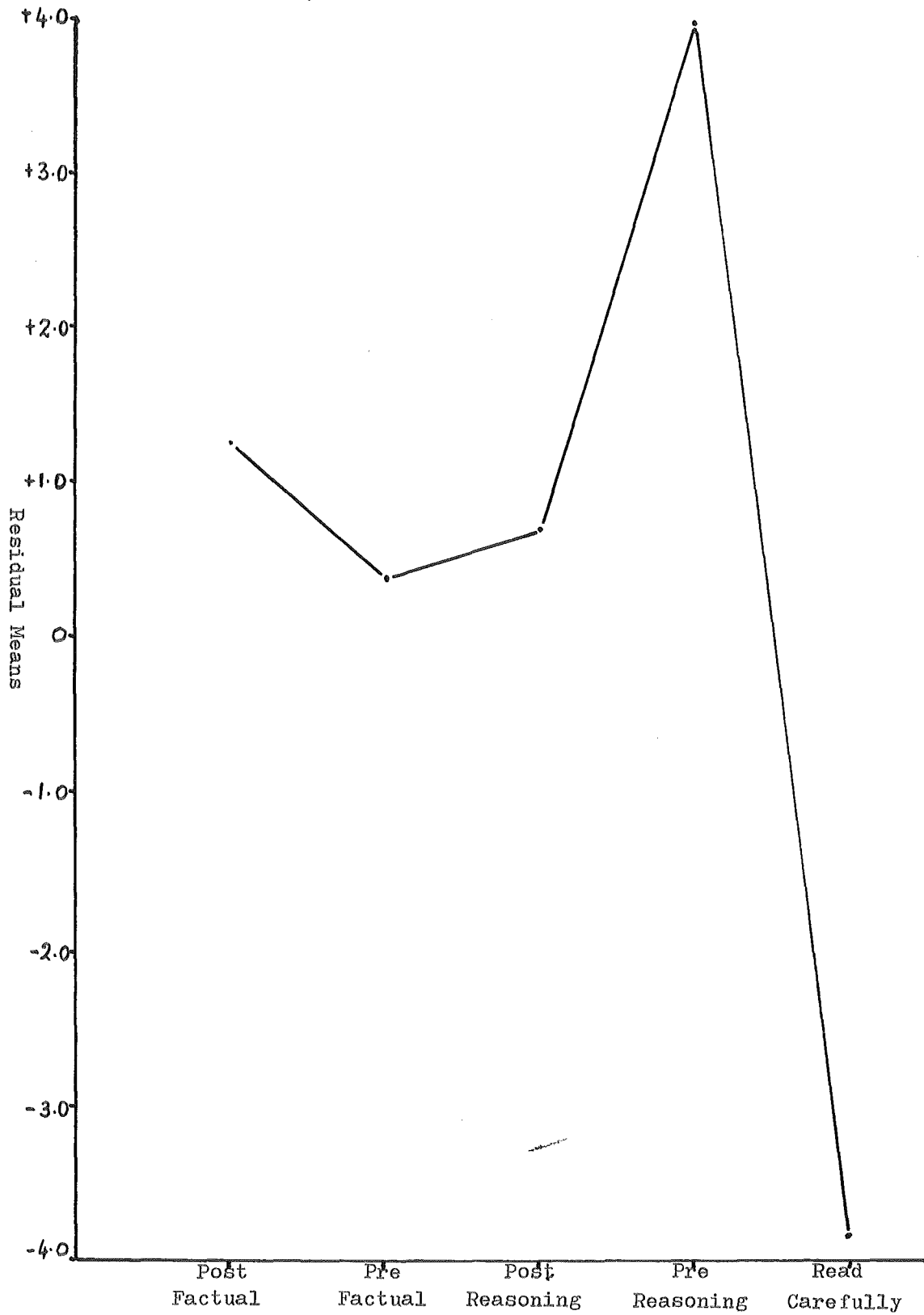


TABLE 3.3

ANALYSIS OF RESIDUAL ACHIEVEMENT SCORES FOR THE THIRD POST TEST ( LONG  
TERM RETENTION, OBJECTIVE - TYPE TEST ) FOR FIRST YEAR STUDENTS

## 1. ANOVA

Source of Variance	MS	df	F Ratio	p
Total	<u>1207.61567</u>			
	150	150		
Between groups	27.14887	4	3.60661	<.05
Within groups	7.52754	146		

## 2. Mean Residual Scores for Five Groups

	Mean	N
1. Post Factual	0.42395	27
2. Pre Factual	-0.12408	23
3. Post Reasoning	0.06995	26
4. Pre Reasoning	1.48408	23
5. Control (Read Carefully)	-0.86682	52

## 3. Individual Comparisons Between Groups

Standard error of the difference = 0.70840

Minimum difference significant at  $p = < .05 = (0.70840) \cdot (2.18)$

= 1.54431

Comparisons	Difference	Significance
1. Post Factual vs Control	1.29077	NS
2. Pre Factual vs Control	0.74274	NS
3. Post Reasoning vs Control	0.93677	NS
4. Pre Reasoning vs Control	2.35090	Sig.
5. Post Factual vs Pre Factual	0.54803	NS
6. Pre Reasoning vs Post Reasoning	1.41413	NS
7. Pre Reasoning vs Pre Factual	1.60816	Sig.
8. Post Factual vs Post Reasoning	0.35400	NS
9. Post Reasoning vs Pre Factual	0.19403	NS

FIGURE 3.3

RESIDUAL ACHIEVEMENT SCORES FOR THE THIRD POST TEST (LONG  
TERM RETENTION, OBJECTIVE-TYPE TEST) FOR FIRST YEAR STUDENTS.

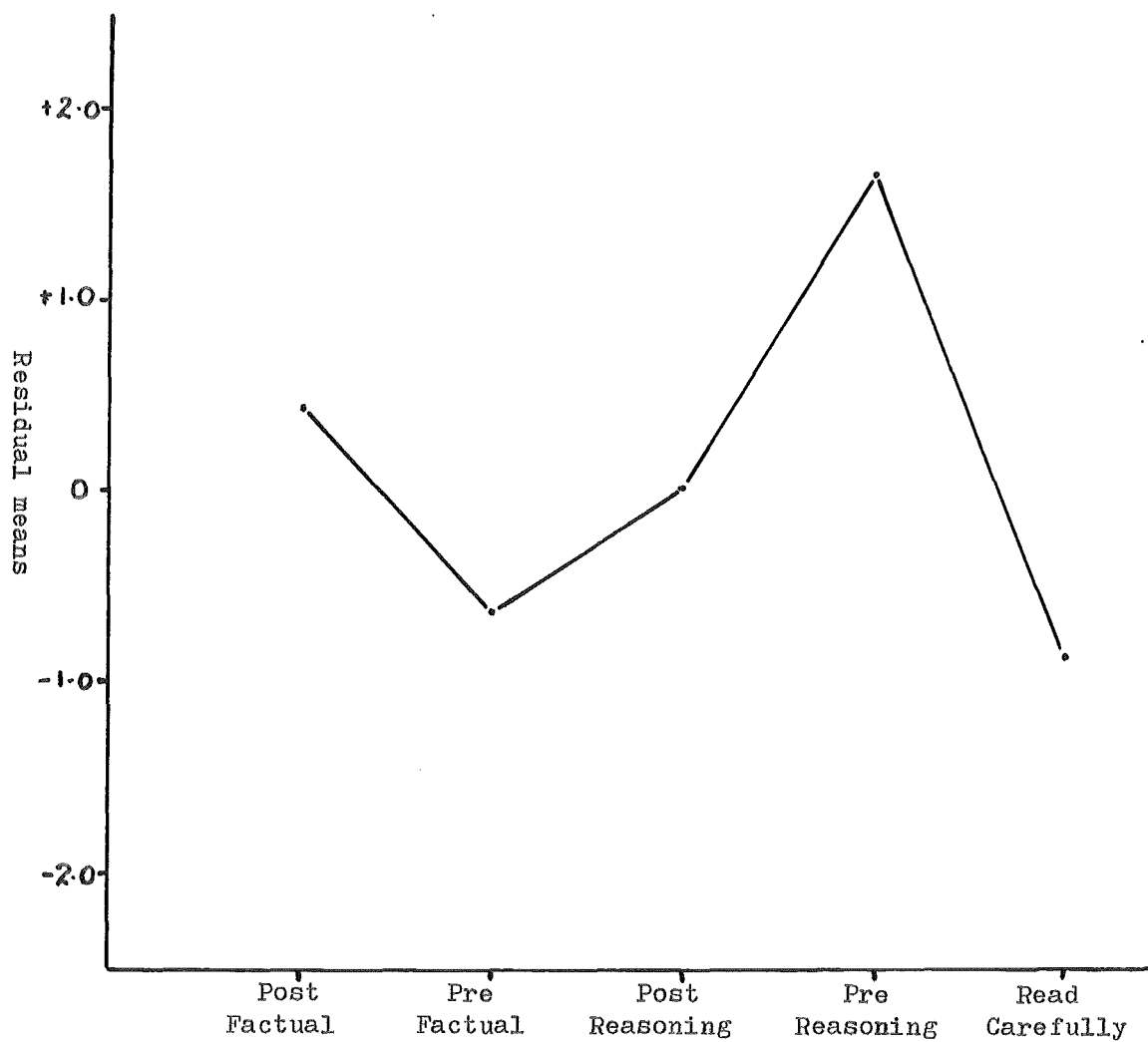


TABLE 3.4

ANALYSIS OF TOTAL RESIDUAL POST TEST ACHIEVEMENT SCORES FOR FIRST  
YEAR STUDENTS NOT CORRECTED FOR TIME

1. ANOVA

Source of Variance	MS	df	F Ratio	p
Total	<u>1151.85742</u> 150	150		
Between groups	516.46449	4	7.93223	<.05
Within groups	65.10959			

2. Mean Residual Scores for Five Groups

	Mean	N
1. Post Factual	2.18189	27
2. Pre Factual	-1.13732	23
3. Post Reasoning	0.58055	26
4. Pre Reasoning	5.99051	23
5. Control (Read Carefully)	-4.58211	52

3. Individual Comparisons Between Groups

Standard error of the difference = 2.08342  
 Minimum difference significant at  $p = < .05$  =  $(2.08342) \cdot (2.18)$   
 = 4.54186

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Control	6.76400	Sig.
2. Pre Factual vs Control	3.44479	NS
3. Post Reasoning vs Control	5.16266	Sig.
4. Pre Reasoning vs Control	10.57262	Sig.
5. Post Factual vs Pre Factual	3.21921	NS
6. Post Factual vs Post Reasoning	1.60134	NS
7. Pre Reasoning vs Post Factual	3.80866	NS
8. Pre Reasoning vs Pre Factual	7.12783	Sig.
9. Pre Reasoning vs Post Reasoning	5.30996	Sig.
10. Post Reasoning vs Pre Factual	1.71787	NS



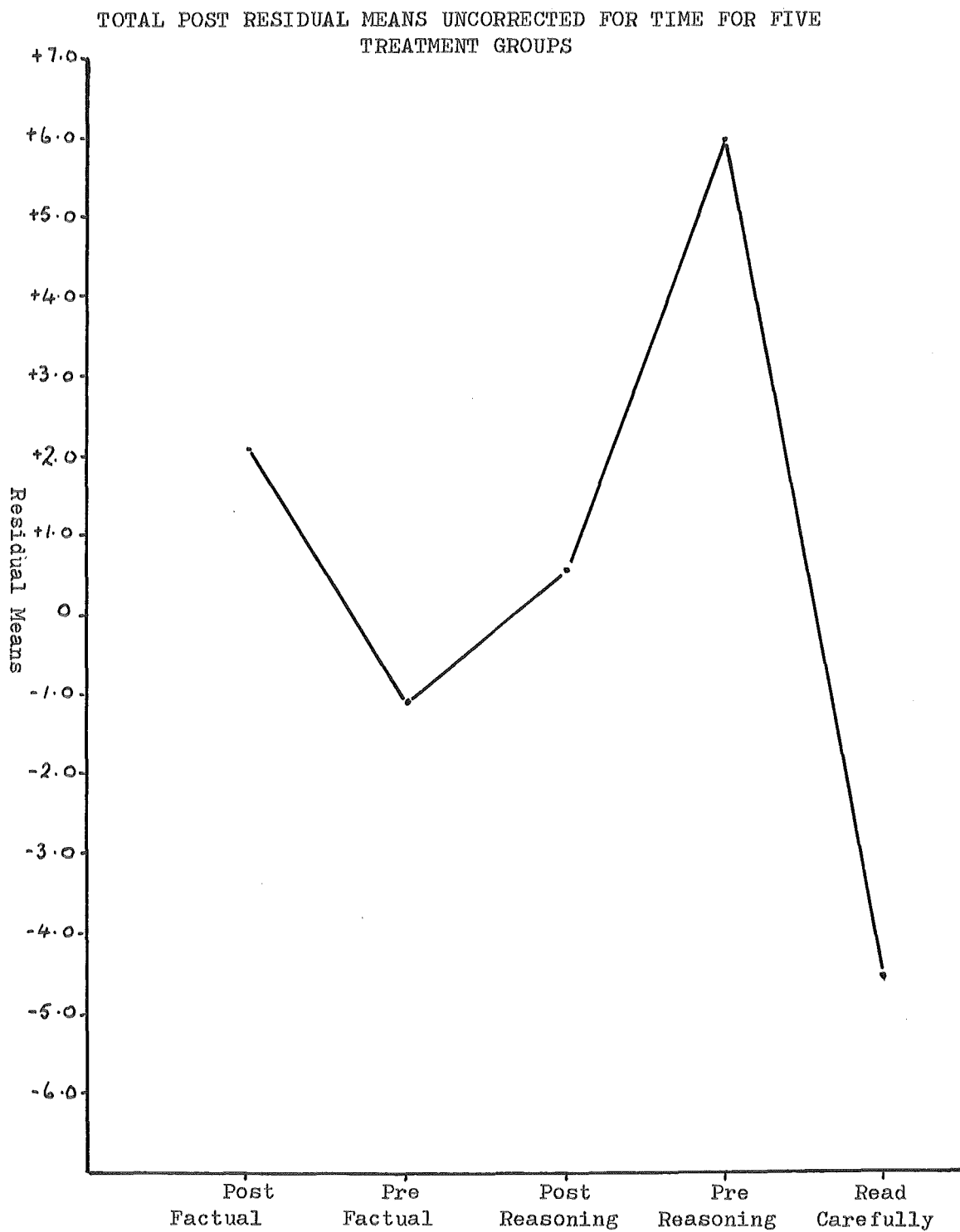
FIGURE 3.4

TABLE 3.5

ANALYSIS OF TOTAL RESIDUAL POST TEST ACHIEVEMENT SCORES FOR FIRST YEAR  
STUDENTS CORRECTED FOR TIME

1. ANOVA

Source of Variance	MS	df	F Ratio	p
Total	<u>10418.14117</u>			
	150	150		
Between groups	228.18745	4	3.50489	< .05
Within groups	65.10542	146		

2. Mean Residual Scores for Five Groups

	<u>Mean</u>	<u>N</u>
1. Post Factual	1.20478	27
2. Pre Factual	-1.21023	23
3. Post Reasoning	-3.33531	26
4. Pre Reasoning	3.14188	23
5. Control (Read Carefully)	-3.18404	52

3. Individual Comparisons Between Groups

Standard error of the difference = 2.08335

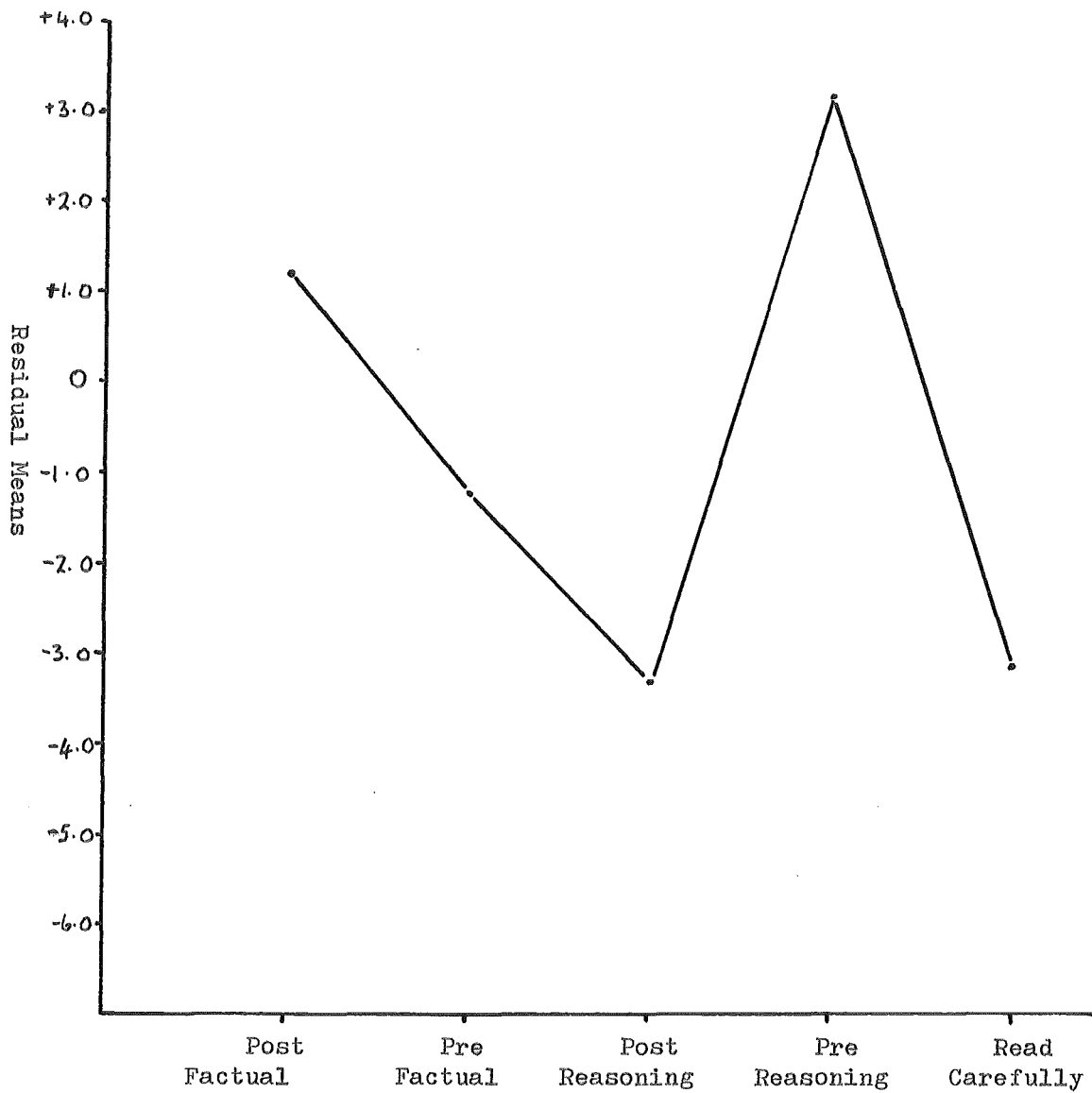
Minimum difference significant at  $p = < .05$  =  $(2.08335) \cdot (2.18)$

= 4.54170

<u>Comparisons</u>	<u>Difference</u>	<u>Significance</u>
1. Post Factual vs Control	4.39319	NS
2. Pre Factual vs Control	2.17381	NS
3. Post Reasoning vs Control	-0.15127	NS
4. Pre Reasoning vs Control	6.32592	Sig.
5. Pre Reasoning vs Post Factual	2.08335	NS
6. Pre Reasoning vs Pre Factual	4.35211	NS
7. Pre Reasoning vs Post Reasoning	6.47719	Sig.
8. Post Factual vs Pre Factual	2.41501	NS
9. Post Factual vs Post Reasoning	4.54009	Borderline

FIGURE 3.5

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS FOR THE FIVE  
TREATMENT GROUPS CORRECTED FOR TIME



3.3, 3.4 and 3.5 present the analysis of variance summaries and the individual comparisons relevant to these three post test scores. They show that the hypothesis is accepted at a highly significant level for the second, third and total post test scores not corrected for time and at a significant level for the total post test scores corrected for time.

#### Hypothesis 4(b).

Hypothesis four (b) stated that the mean achievement scores of the pre reasoning group would be significantly higher on the second, third and total post test scores, not corrected and corrected for time, compared with the mean achievement scores of the pre factual group. Tables and Figures 3.2 (second post test), 3.3 (third post test), and 3.4 (total post test scores not corrected for time) present the relevant analyses of variance summaries and individual comparisons which show that this hypothesis is accepted for these post test measures.

Table and Figure 3.5 present the analysis of variance summary and individual comparisons for the total post test scores corrected for time and show that the hypothesis is no longer tenable when the effects of time are taken into account.

#### Hypothesis 4(c).

Hypothesis four (c) stated that the mean achievement scores of the pre reasoning group would be significantly higher on the second, third and total post test scores, not corrected and corrected for time, compared with the mean achievement scores of

the post factual group. Tables and Figures 3.2 to 3.5 present the relevant analyses of variance summaries and individual comparisons which show that this hypothesis is not tenable, although the residual achievement scores were in the predicted direction for each of these four post test measures.

#### Hypothesis 4(d).

Hypothesis four (d) stated that the mean achievement scores of the pre reasoning group would be significantly higher on the second, third and total post test scores not corrected and corrected for time, compared with the mean achievement scores of the post reasoning group. Tables and Figures 3.2 (second post test), 3.4 (total post test scores not corrected for time) and 3.5 (total post test scores corrected for time) present the analyses of variance summaries and individual comparisons which show that this hypothesis is accepted for these post test measures.

Table and Figure 3.3 present the analysis of variance summary and individual comparisons for the third post test. The table shows that the hypothesis is not tenable for this comparison.

#### Hypothesis 5(a).

Hypothesis five (a) stated that there would be no significant difference between the residual achievement scores of all the question guided groups when the first post test scores are compared. Table and Figure 3.1 present the analysis

of variance summary and individual comparisons between groups for the first (immediate) post test residual achievement scores. The table shows that the hypothesis is tenable and that there was no significant difference between any of the residual mean achievement scores on the first post test.

#### Hypothesis 5(b).

Hypothesis five (b) stated that the residual mean achievement scores of each of the question guided groups would be significantly higher on each of the post test measures when compared with the read carefully group. Table and Figure 3.1 present the analysis of variance summary and the individual comparisons between groups on the first post test. The table shows that the hypothesis is untenable, with none of the differences reaching an acceptable level of significance, although they were all in the predicted direction.

The analysis of variance summary presented in Table and Figure 3.2 shows that the hypothesis 5(b) is supported for each of the question guided groups on the second post test (essay-type, long term retention).

Table and Figure 3.3 present the analysis of variance summary and the individual comparisons between groups for the third post test. The table shows that the hypothesis is accepted for the pre reasoning group but must be rejected in favour for the null hypothesis for the pre and post factual and the post reasoning guided groups. The differences,

however, are all in the predicted direction.

The analyses of variance summary and individual comparisons for the total post test scores, uncorrected for the effects of time, are reported in Table and Figure 3.4. These show that the hypothesis must be accepted for the post factual group, and for the post and pre reasoning groups. The hypothesis must be rejected, however, in favour of the null hypothesis for the pre factual group comparison.

Table and Figure 3.5 present the analyses of variance summary and the individual comparisons between groups for the total post test, corrected for time. The summary shows that the hypothesis is accepted for the pre reasoning treatment but is not supported for the remaining three question guided treatments, although the post factual group approaches the five per cent level of significance and could be considered a borderline effect.

#### Hypothesis 6.

Hypothesis six stated that there would be no significant difference between the corrected achievement scores of the post reasoning group and the post factual group when the first, second, third and total post test scores, uncorrected for time, are compared. The analyses of variance summaries of the residual achievement scores and individual comparisons between groups presented in Tables and Figures 3.1, 3.2, 3.3 and 3.4 show that the hypothesis is supported. When the comparisons are examined in these tables it can be seen that the differences

between these two groups' mean residual achievement scores are the smallest of all the reported comparisons, except for the first post test (Table 3.1). When the total post test residual achievement scores are corrected for a highly significant time effect (Table 3.6), the variation between the scores achieved by the groups using these two methods of being guided in their reading reaches a borderline level of significance in favour of the post factual group.

#### Hypothesis 7.

Hypothesis seven stated that the post reasoning group will have significantly higher corrected achievement scores when compared with those scores achieved by the pre factual group on the second, third and total post tests, not corrected for time. Tables 3.2, 3.3 and 3.4 show that the hypothesis is not supported.

3. Third Series: The interaction effect between question type (factual and reasoning) and question placement (pre and post) on learning and remembering when reading textual materials.

For the third series of experiments the data is analysed using a factorial design in a 2 x 2 analysis of variance. The first factor is question type (factual and reasoning) and the second factor is question placement (pre and post reading). The results are reported in both table and graph form.



Tables 4.1, 4.2, 4.3 and 4.4 show the analysis of variance and means for all effects for the first, second, third and total post test residual achievement scores, uncorrected for time. Figures 4.1, 4.2, 4.3 and 4.4 show the interaction analysis for the same scores between question type and question placement. It can be seen that there is a significant effect for the interaction between question type and question placement on the first, third and total post test scores, and that the interaction effect between these two variables can be termed borderline for the second post test scores.

Table 4.5 (Figure 4.5) shows the analysis of variance and means for all effects for the amount of time taken by the four experimental groups for their reading of the textual materials. It can be seen that there is a significant effect for both question type and question placement for this variable, but that there is no significant effect for the interaction between the two.

Table 4.6 (Figure 4.6) shows the analysis of variance and the means for all effects for the total post test scores, corrected for time taken for the reading task. It can be seen that there is a significant effect between question type and question placement, but, as with the other post test results in this series, no significant effect for question type or for question placement.

#### Hypothesis 8.

Hypothesis eight stated that the groups directed to read

with pre or post reasoning groups would take significantly more time to complete their reading task than those groups directed to read with factual questions. Table and Figure 4.5 show that the hypothesis is supported at a highly significant level.

#### Hypothesis 9.

Hypothesis nine stated that there would be a significant interaction effect observed between the effects of question type and question placement when the corrected achievement scores for each of the post test measures and their totals, not corrected and corrected for time, were compared. The post factual and pre reasoning groups it was predicted would achieve at a higher level than the pre factual and post reasoning groups. Tables and Figures 4.1, 4.3, 4.4 and 4.6 present the analysis of variance summaries of the residual achievement scores on the first, third and total post test scores, not corrected and corrected for time, and all show that the hypothesis is accepted. Table and Figure 4.2 present the analysis of variance summary for the second post test and show that the interaction effect for this post test is borderline. On both the total post test analyses it can be seen that the interaction effect is highly significant.

TABLE 4.1

ANALYSIS OF RESIDUAL SCORES ON THE FIRST POST TEST ACHIEVED BY FIRST  
YEAR STUDENTS WHEN READING TEXTUAL MATERIALS USING PRE OR POST ADJUNCT  
QUESTIONS OF A FACTUAL OR REASONING KIND

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	6.799	98		
Between	18.994	3		
Question Type	8.510	1	1.3269	0.251
Question Placement	11.919	1	1.8583	0.173
Type X Placement Interaction	36.554	1	5.6992	0.018
Total Within	6.414	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	-0.5520	0.0360
Position	Post	Pre
Post vs Pre	0.0899	-0.6059
Type X Placement Interaction	Post	Pre
Factual	0.4051	-1.5090
Reasoning	-0.2254	0.2973

---

FIGURE 4.1

FIRST POST TEST: INTERACTIONS OF QUESTION TYPE AND  
QUESTION POSITION

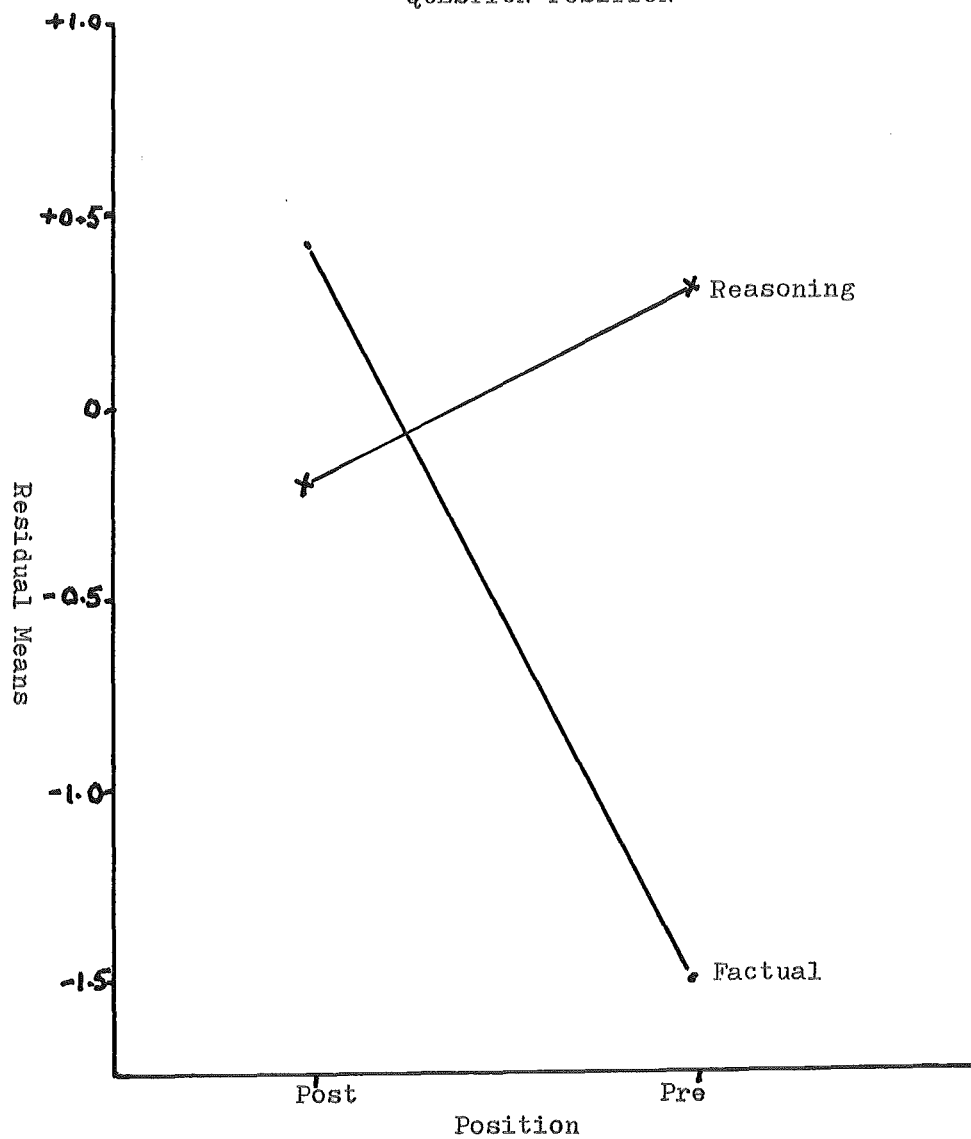


TABLE 4.2

ANALYSIS OF RESIDUAL SCORES ON THE SECOND POST TEST ACHIEVED BY FIRST  
YEAR STUDENTS WHEN READING TEXTUAL MATERIALS USING PRE OR POST ADJUNCT  
QUESTIONS OF A FACTUAL OR REASONING KIND

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	31.256	98		
Between	64.734	3		
Question Type	55.797	1	1.8477	0.1739
Question Placement	36.291	1	1.2017	0.2752
Type X Placement Interaction	102.115	1	3.3814	0.0656
Total Within	30.199	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	0.8016	2.3069
Position	Post	Pre
Post vs Pre	0.9472	2.1613
Type X Placement Interaction	Post	Pre
Factual	1.2128	0.3904
Reasoning	0.6817	3.9322

FIGURE 4.2

SECOND POST TEST: INTERACTION OF QUESTION TYPE AND  
QUESTION POSITION.

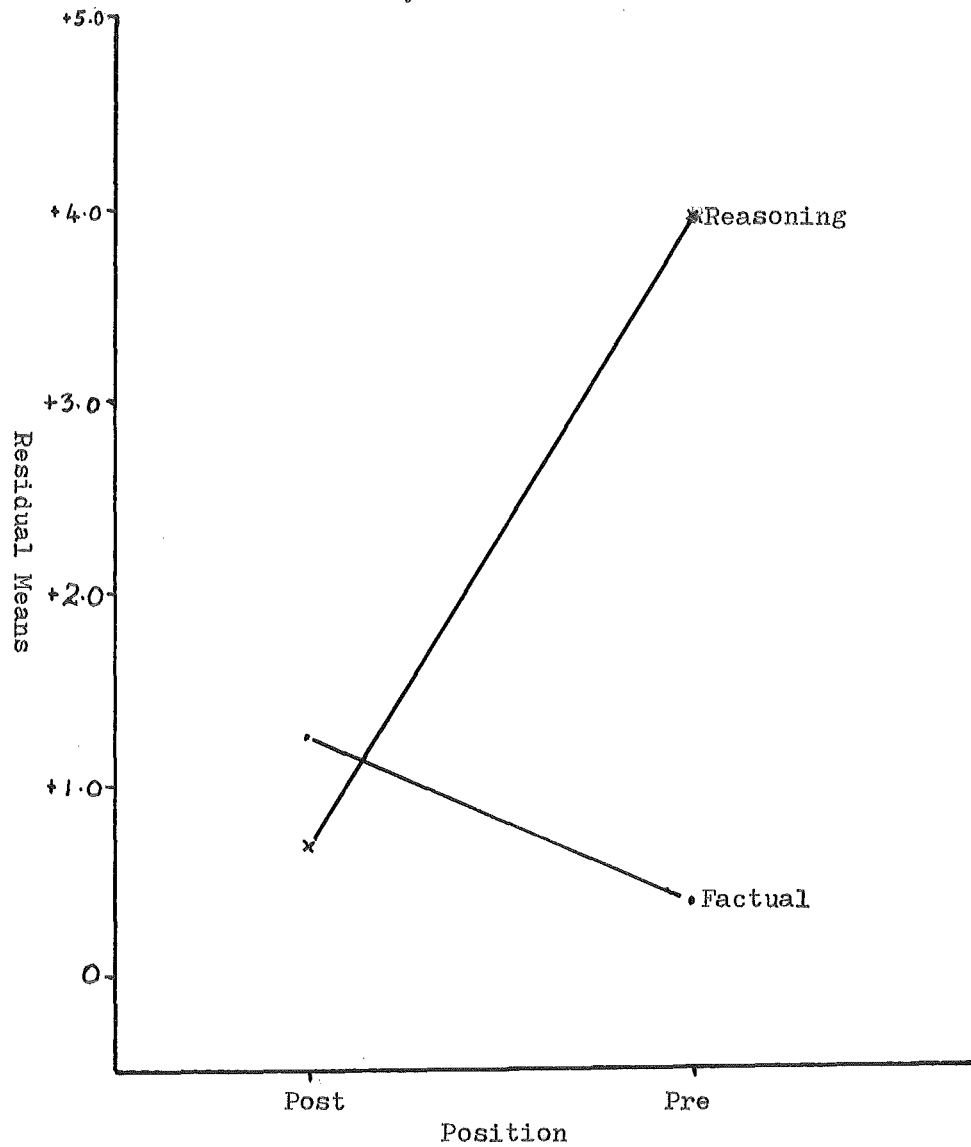


TABLE 4.3

ANALYSIS OF RESIDUAL SCORES ON THE THIRD POST TEST ACHIEVED BY FIRST  
YEAR STUDENTS WHEN READING TEXTUAL MATERIALS USING PRE OR POST ADJUNCT  
QUESTIONS OF A FACTUAL OR REASONING KIND

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	7.465	98		
Between	16.028	3		
Question Type	12.798	1	1.7788	0.182
Question Placement	6.836	1	0.9502	0.667
Type X Placement Interaction	28.451	1	3.9546	0.047
Total Within	7.194	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	0.1499	0.8709
Position	Post	Pre
Post vs Pre	0.2469	0.7739
Type X Placement Interaction	Post	Pre
Factual	0.4240	-0.1241
Reasoning	0.0699	1.6718

FIGURE 4.3

THIRD POST TEST: INTERACTION OF QUESTION TYPE AND  
QUESTION POSITION

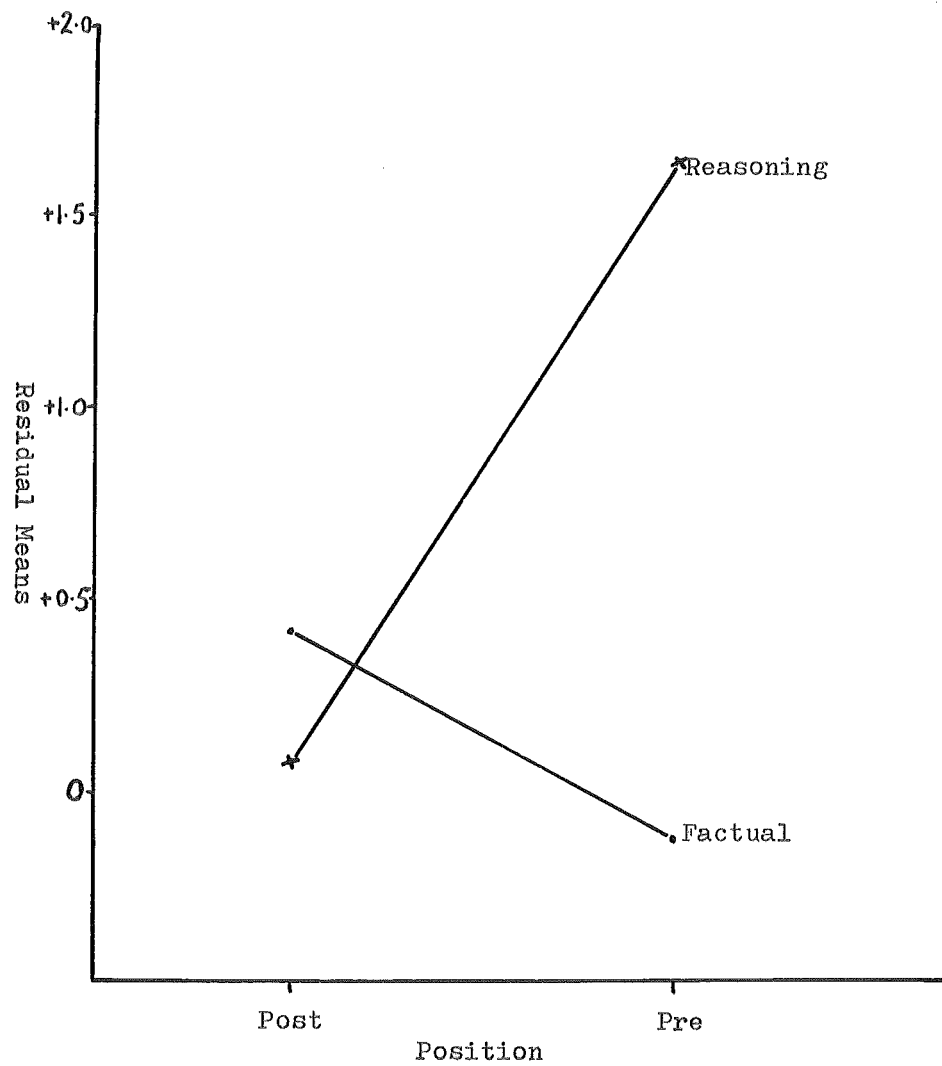




TABLE 4.4

ANALYSIS OF POST TEST RESIDUAL SCORES ( UNCORRECTED FOR TIME ) ACHIEVED  
BY FIRST YEAR STUDENTS WHEN READING TEXTUAL MATERIALS USING PRE OR POST  
ADJUNCT QUESTIONS OF A FACTUAL OR REASONING KIND

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	65.148	98		
Between	227.984	3		
Question Type	188.002	1	3.1331	0.076
Question Placement	26.908	1	0.4484	0.512
Type X Placement Interaction	469.041	1	7.8166	0.006
Total Within	60.006	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	0.5223	3.2855
Position	Post	Pre
Post vs Pre	1.3812	2.4266
Type X Placement Interaction	Post	Pre
Factual	2.1819	-1.1373
Reasoning	0.5805	5.9905

FIGURE 4.4

TOTAL TEST SCORE (UNCORRECTED) : INTERACTION OF  
QUESTION TYPE AND QUESTION POSITION

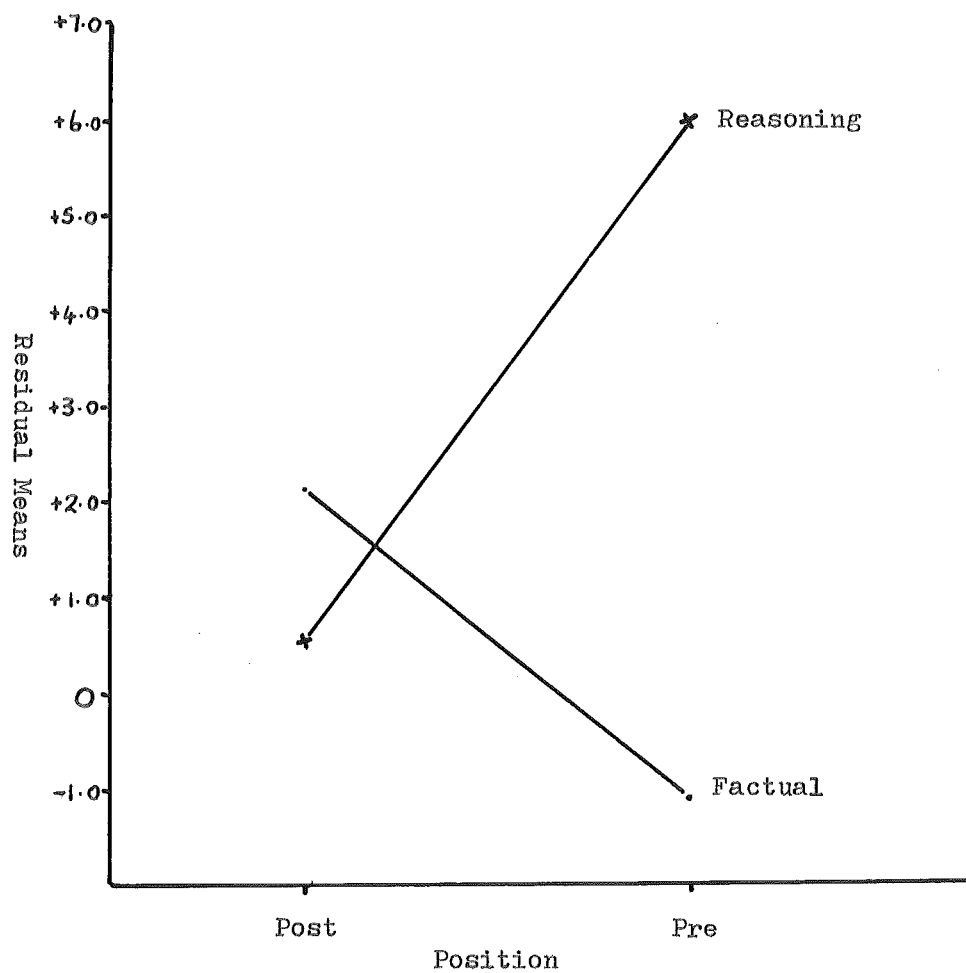


TABLE 4.5

ANALYSIS OF RESIDUAL SCORES FOR TIME TAKEN BY FIRST YEAR STUDENTS WHEN  
 READING TEXTUAL MATERIALS USING PRE OR POST ADJUNCT QUESTIONS OF A  
 FACTUAL OR REASONING KIND

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	522.963	98		
Between	10838.293	3		
Question Type	29035.512	1	147.2270	0.000
Question Placement	3455.692	1	17.5224	0.000
Type X Placement Interaction	23.683	1	0.1201	0.729
Total Within	197.216	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	6.3099	40.6500
Position	Post	Pre
Post vs Pre	29.4034	17.5565
Type X Placement Interaction	Post	Pre
Factual	11.7435	0.8762
Reasoning	47.0632	34.2367

FIGURE 4.5

TIME TAKEN : INTERACTION EFFECT OF QUESTION  
TYPE AND QUESTION POSITION

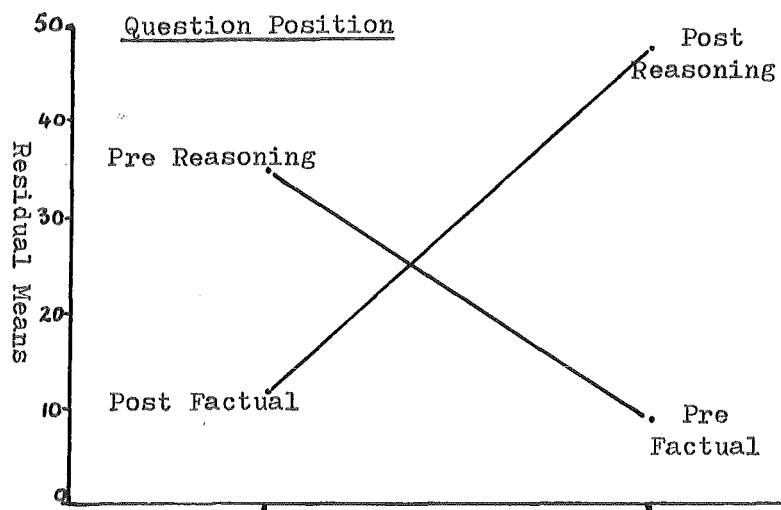
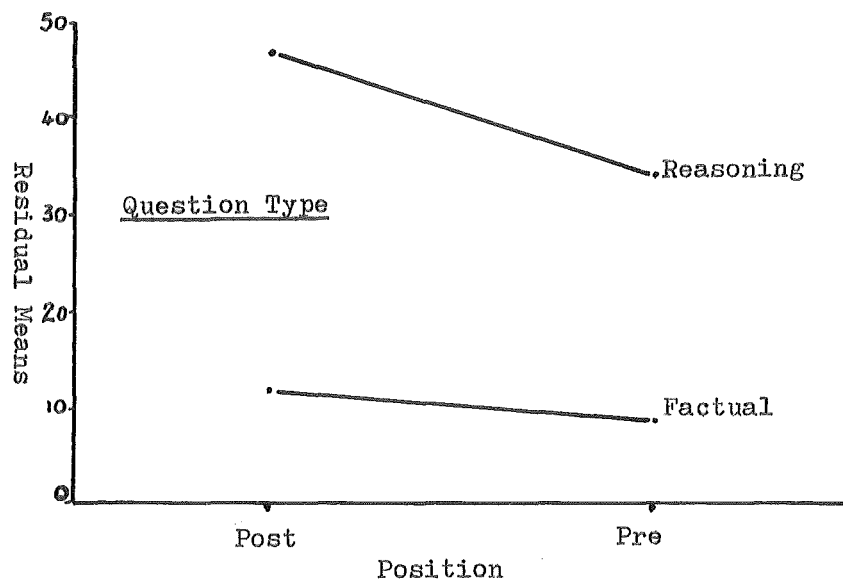


TABLE 4.6

ANALYSIS OF TOTAL POST TEST RESIDUAL SCORES ( CORRECTED FOR TIME )  
 ACHIEVED BY FIRST YEAR STUDENTS WHEN READING TEXTUAL MATERIALS USING  
 PRE OR POST ADJUNCT QUESTIONS OF A FACTUAL OR REASONING KIND

1. ANOVA

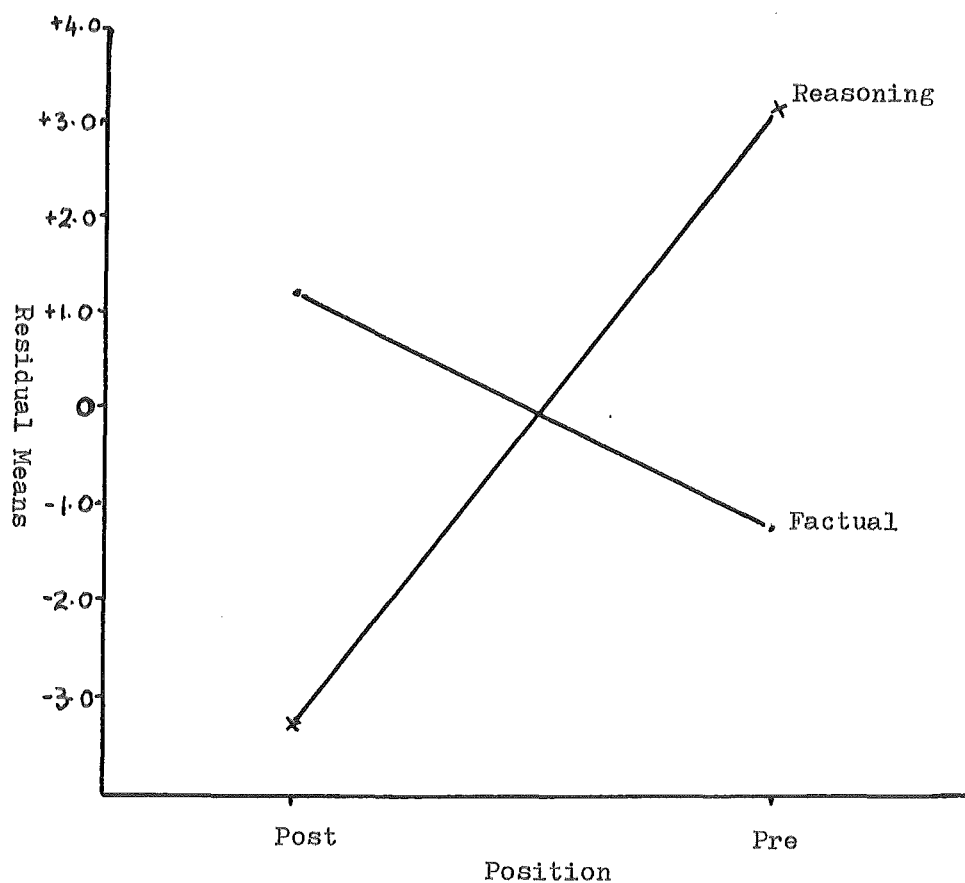
Source of Variance	MS	df	F Ratio	p Value
Total	66.918	98		
Between	196.172	3		
Question Type	0.218	1	0.0035	0.952
Question Placement	101.574	1	1.6165	0.204
Type X Placement Interaction	486.723	1	7.7459	0.007
Total Within	62.836	95		

2. Means of Residual Scores for all Effects

Type	Factual	Reasoning
Factual vs Reasoning	-0.0027	-0.0967
Position	Post	Pre
Post vs Pre	-1.0653	0.9658
Type X Placement Interaction	Post	Pre
Factual	1.2048	-1.2102
Reasoning	-3.3353	3.1419

FIGURE 4.6

TOTAL TEST SCORE (CORRECTED FOR TIME) INTERACTION OF  
QUESTION TYPE AND QUESTION POSITION



B. Experimental Section II: The effects on reading improvement of studying a reading content and methods course using adjunct questions for required reading.

For this experimental section the criterion scores consist of the pre test and post test scores achieved by the 1969 and 1970 first year students on the Co-operative Reading Comprehension Test, Form Y. The data is analysed using a factorial design in a 2 x 2 analysis of variance. The first factor is treatment ('reading' or 'no reading') and the second factor is year (1969 or 1970). The results are reported in table and graph form.

Table 5.0 sets out the means and standard deviations of the four groups on the pre test of reading achievement. Table 5.1 presents the analysis of variance on the pre test scores of the four groups and shows that there were no significant variations between the groups by treatment, by year or by interaction on entry to Teachers' College.

Table 5.2 sets out the means and standard deviations of the four groups on the post test reading achievement. Table 5.3 presents the analysis of variance on the post test scores of these four groups and it shows that there were significant variations between the groups by treatment, but not by year or by interaction after ten months at Teachers' College.

The hypothesis relevant to this experimental section, recorded on page 48 of this thesis, is thus confirmed at the five per cent level of confidence. However, it should be

noted that this analysis has been carried out on the post test scores only and a stronger argument could be made by using regressed gain scores either in an analysis of covariance model or by an analysis of variance of actual regressed gain scores. It was felt that in the present study such an analysis was unwarranted as it has not been possible to control a number of important variables such as the amount of question guided reading completed by each student and the effects of students' increased knowledge and understanding of the processes and skills involved in reading. In view of this, these analyses should be seen as providing the basis of further hypotheses.

Figure 5.0 presents the summary of the data in graph form.



TABLE 5.0

PRETEST MEANS AND STANDARD DEVIATIONS OF READING SYLLABUS AND NO READING SYLLABUS GROUPS IN 1969 AND 1970

	READING		NO READING	
	Mean	S.D.	Mean	S.D.
1969	168.745	15.0064	168.987	17.892
1970	168.2954	18.5831	166.9418	17.9933

TABLE 5.1

ANALYSIS OF PRETEST ACHIEVEMENT SCORES FOR THE READING AND NO READING SYLLABUS GROUPS

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	336.585	473		
Between	96.351	3		
Treatment	41.293	1	0.1221	0.7272 NS
Year	178.938	1	0.5292	0.5257 NS
Year X Treatment	68.822	1	0.2035	0.6569 NS
Within	338.119	470		

TABLE 5.2

POST TEST MEANS AND STANDARD DEVIATION OF READING SYLLABUS AND NO READING  
SYLLABUS GROUPS IN 1969 AND 1970

	READING		NO READING	
	Mean	S.D.	Mean	S.D.
1969	181.8121	21.2913	178.437	20.137
1970	181.387	18.5831	176.756	19.9965

TABLE 5.3

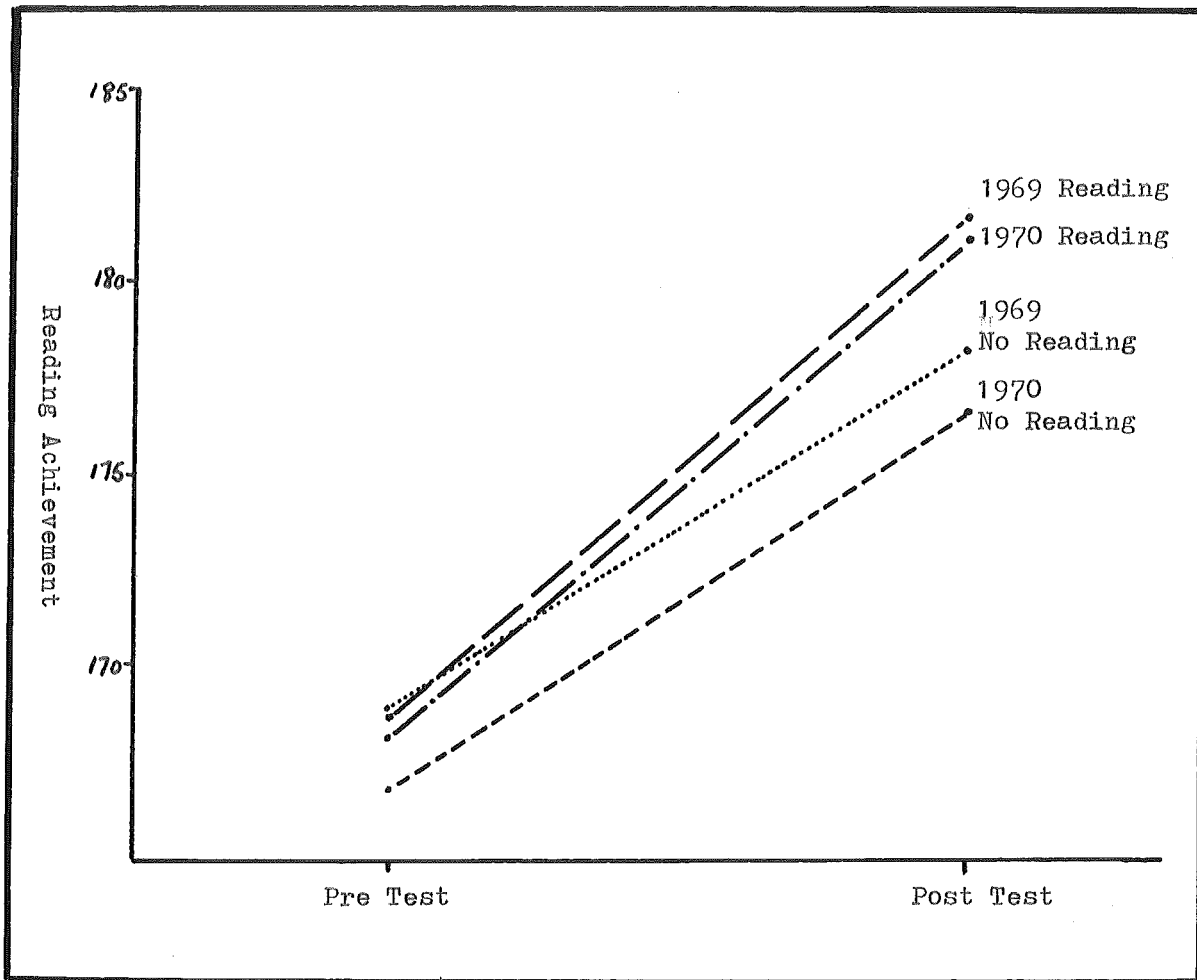
ANALYSIS OF POST TEST ACHIEVEMENT SCORES FOR THE READING AND NO READING  
SYLLABUS GROUPS

1. ANOVA

Source of Variance	MS	df	F Ratio	p Value
Total	413.310	473		
Between	646.929	3		
Reading v No Reading	1768.732	1	4.2949	0.0364 Sig.
1969 v 1970	130.762	1	0.3175	0.5804 NS
Year X Treatment	41.293	1	0.1003	0.7503 NS
Within	411.819	470		

FIGURE 7.0

PRE AND POST TEST MEAN ACHIEVEMENT SCORES FOR THE READING AND NO READING  
SYLLABUS GROUPS



## C. Survey Section.

### Introduction

The data obtained from the analysis of the responses on both questionnaires has been reported in four forms. For the 'totally structured response' type of question the results have been reported as a percentage of the total number of students responding to each particular question. This method has also been followed for the 'structured response with a free option' since the students seldom departed from the structured list of options.

Where these 'structured' types of questions have required the students to rank their choices according to certain criteria, the number of responses for each rank order has been converted to a percentage based on the total number of students responding to each question. For one of the questions where ranking has been required, the results have been reported graphically.

For the 'limited free response' questions, the responses have been classified according to certain clearly identifiable categories and then reported as percentages of the total number of students responding to the question. A representative sample of the students' verbatim responses has been listed.

#### 1. The Reading Syllabus Study Questionnaire.

The Reading Syllabus Study Questionnaire results directly related to this thesis have been reported in eight topic areas:

the course outline, 'directed reading', procedures used by students in doing 'directed reading', directions usually given to students for required reading, student reading improvement, student opinions concerning the technique of 'directed reading', and the amount of required reading done.

a. The course outline.

The four questions directly related to the course outline were aimed at determining: how often students used the outline (Table 6.0); how they thought it helped them with respect to their study for the course (Table 6.1); which aspects of the course outline they found helpful (Table 6.2), and finally their views as to how many of their subject-area course outlines they felt should be similarly structured (Table 6.3).

For the questions in Table 6.1 and 6.2 there was no limit to the number of responses each student could choose. The percentages for each category have therefore been calculated separately.

TABLE 6.0

Question: Did you use it (the course outline)?

	Percentage
	N = 453
a. not at all.	4
b. occasionally.	28
c. regularly.	68
Total	100

TABLE 6.1

Question: If you used the course outline regularly do you think it helped you to:

	Percentage
	N = 437
a. achieve better in the course?	45
b. study more effectively for this particular course?	65
c. work harder than you usually do?	43
d. transfer any skills developed to other subject areas?	17

TABLE 6.2

Question: If you used the course outline regularly which aspects did you find: A. helpful?  
B. most helpful?

	Percentage		
	N = 453		
	Helpful	Most Helpful	Total
a. aims for the course.	5	0	22
b. introductory statement for each topic.	28	3	31
c. general directions for reading chapters, sections of chapters and notes issued.	55	11	66
d. directed reading questions.	54	21	75
e. explanations for cyclostyled material issued.	32	4	36
f. assignment details.	62	8	70

TABLE 6.3

Question: Assuming that careful attention would be given to balancing student work load, how many of your course outlines should be detailed like the Reading Syllabus Study one?

	Percentage
	N = 417
a. all.	40
b. most.	31
c. some.	26
d. not any .	3
Total	100

With respect to the results obtained from the question related to how students thought that a highly structured, study-guide type course outline helped them during a course (Table 6.1), it can be seen that 65 per cent thought that it helped them 'study more effectively', that 45 per cent thought that it helped them 'achieve better in the course', and that 43 per cent thought that having this type of guide caused them to work harder than they usually did.

When questioning to establish which aspects of the course outline were found to be helpful or most helpful, it can be seen that 75 per cent of 453 students saw 'directed reading'

questions as being either helpful (54 per cent) or most helpful (21 per cent).

b. Directed reading.

(i) Positive effects of directed reading.

The first question related to directed reading was specifically aimed at discovering the values seen by students in being directed to their required reading by questions for which they were to write answers. This question was of the 'totally structured response' kind, and the percentage for each category has been calculated for the 453 students.

The students were asked to indicate which aspects of their reading they felt were markedly assisted by the use of this kind of direction for their reading, but the two categories of 'assisted' and 'markedly assisted' have been combined for this analysis, with the recorded percentages representing the total number of students selecting each category.

The results indicate that the majority (86 per cent) of the 453 students answering this question saw 'directed reading' as helping them find key ideas and supporting details, that 62 per cent were of the opinion that it increased their knowledge of the subject matter being studied, and that 60 per cent indicated that it aided their understanding of what was being read.



TABLE 7.0

Question: What values for improving your reading do you see in the type of directed reading where you were asked to record answers to questions? You are asked to ring any of the following list that apply, in the light of your experience with this kind of direction for your reading. You should double ring any of the items below which you feel were markedly assisted by this type of directed reading.

	Percentage
	<u>N = 453</u>
a. helps you to make your reading more purposeful.	76
b. motivates you to read your text.	45
c. aids your understanding of what is being read.	60
d. helps you to find key ideas and supporting details.	86
e. assists you to become interested in what you are reading about.	20
f. stimulates your thinking about what is being read.	41
g. reduces 'verbalism' (slipping over words and ideas not understood).	48
h. increases your knowledge of the subject matter being studied.	62
i. helps you to prepare for tests and examinations.	56
j. makes you more aware of the intense concentration required for 'study-type reading'.	52
k. stops your mind 'wandering off' on to other things.	21
l. causes you to read your text more than you would usually do.	74

Although it would be expected that 'directed reading' techniques where written answers were required would cause students to read their text more than they would usually do, it is significant that 45 per cent felt that it motivated them to read their text, and that three out of every four students answering this question thought that directed reading helped to make their reading more purposeful.

(ii) Negative effects of directed reading.

The second question in this section was of a totally-structured-ranking-kind and was aimed at determining the negative effects of 'directed reading' on students' attitudes and actions with regard to their required reading.

The results of this question indicate that the two most common 'disadvantages' seen by students in this type of direction for their reading were that it caused 91 per cent of them to either occasionally (54 per cent) or often (37 per cent) look for the answers to the questions and ignore the remainder of the chapter and that it caused 68 per cent to become antagonistic towards the main text used.

TABLE 7.1

Question: Were there any disadvantages for you personally in this kind of assignment? (Being directed to read with questions for which written answers were required).

	N	Percentage			Total
		Not at all	Occasion- ally	Always	
a. did being directed to read and find answers to questions develop in you a negative attitude towards reading?	444	45	46	9	100
b. did it restrict you in establishing your own purposes for your required reading?	430	52	36	12	100
c. did it cause you to look only for the answers to the questions and ignore the remainder of the chapter?	449	9	54	37	100
d. did it cause you to lose interest in what you were reading?	440	42	39	9	100
e. did it cause you to use someone else's assignment to obtain answers?	438	80	18	2	100
f. did it restrict your thinking concerning what was being read?	434	43	46	11	100
g. did it cause you to become antagonistic towards the main text used?	443	32	42	26	100

(iii) Methods of directing reading preferred by students.

The final question in this section was of the totally structured kind aimed at determining which method or methods of being directed to their required reading the students found helpful or most helpful.

TABLE 7.2

Question: Through your course outline you were directed to read your texts by a variety of ways. Ring the method(s) you found helpful. (You may double ring any methods you found most helpful).

	Percentage		
	N = 453		
	Helpful	Most Helpful	Total
a. directed by page numbers and asked to read.	20	4	24
b. directed to pages or chapters and asked to read carefully and note certain parts.	47	12	59
c. directed to pages or chapters by questions without written answers being required.	19	2	21
d. directed to pages or chapters and required to answer questions in written form.	45	31	76

The results of this question indicate that students favour being directed to read by questions for which a written answer

is required. It should be noted that 31 per cent of those students selecting this category saw it as 'most helpful'. They find being directed by page numbers and asked to read slightly more helpful than being directed by questions for which no written answers were required.

c. Procedures used by students in carrying out their directed reading tasks.

The two questions relevant to this topic were not used in the 1969 form of the questionnaire but were constructed in order to obtain more specific information about the use students made of the directions given for their reading.

The questions had two main purposes: to discover how the students used the questions and directions when written answers were required, and to establish the action they usually took when written answers were not required. The questions were of the totally structured kind with a frequency rating scale.

The results indicate that students preferred to use the questions or directions in a pre reading rather than a post reading position, with 66 per cent reporting that they usually or always 'read the question or direction, then read the relevant section looking for the answer', and 18 per cent reporting that they usually or always follow the post reading procedure. It should be noted that only 17 per cent regularly previewed the material they were required to read, but that 56 per cent read the 'advance organizer' introductory or preview statement for each topic regularly.

TABLE 3.0

Question: What procedures did you follow when you were required to write out answers to questions and directions for assigned reading?

		Percentage				
	N	Never	Occasion- ally	Usually	Always	Total
a. read the introductory or preview statement in the course outline for each topic.	161	9	35	36	20	100
b. read the question or direction then read the relevant section looking for the answer.	157	7	27	53	13	100
c. read the relevant section then read the question and found the answers by looking back.	153	20	62	15	3	100
d. previewed the material to be read.	167	36	47	15	2	100
e. simply looked for the answers to the questions without reading the whole section.	157	32	47	20	1	100

d. Directions usually given to students for required reading.

Two questions will be reported in this section. The first was of the 'limited free response' kind and was included

in the questionnaire administered in 1969. From the results obtained from this question and from discussions with students a 'totally structured' type of question was constructed for the 1970 administration. It was not possible, however, to give this to more than one group so the N for this question is too small for reliable conclusions to be drawn.

The analysis of the results for the first question was made by examining 175 students' responses selected consecutively from first and second year student questionnaire forms, and classifying their observations under five clearly definable headings. Percentages were then calculated for each category.

TABLE 9.0

Question: How are you usually directed to any required reading in your college textbooks?

	Percentage
	N = 175
a. simply given page numbers or chapters to read.	83
b. directed to specific topics.	2
c. by being given questions as guides.	3
d. by being given page numbers or chapters to read for a test.	9
e. by being told to look for certain points relevant to the topic.	2
Total	100

TABLE 9.1

Question: Without reference to the Reading Syllabus Study what methods do your lecturers use MOST to direct you to required reading, relevant to their courses?

	Percentage
	N = 78
a. by giving you page numbers or chapters to read before the topic has been covered in lectures.	26
b. by giving you page numbers of chapters to read after the topic has been covered in lectures.	10
c. by stating that there will be a test on the required reading.	47
d. by using written questions and directions to guide your reading specifically.	14
e. by stimulating your interest in the particular topic so that you want to do the required reading.	3
Total	100

When the responses to categories a, b and c in Table 9.1 are totalled it can be seen that 83 per cent of those students responding to this question report that they are usually directed to their required reading by 'page numbers', 'chapters' or 'to read for a test'. Because this final category is not sufficiently explicit it cannot be certain whether the required reading for the tests may have been directed by questions or by page numbers or chapters.



## e. Student reading improvement.

The questions concerning reading improvement were aimed at obtaining a general indication of students' views about their own reading ability compared with other college students, whether they thought that they could improve their reading ability, whether they thought that they had improved their own reading ability since being at college, and what percentage of students would or might voluntarily attend a reading improvement course if it were offered. These questions were all of the 'totally structured' response kind. For comparison purposes, the questions in this section were also included in the College Reading Questionnaire.

TABLE 10.0

Question: Do you think you could improve your general reading ability?

	Percentage
	N = 307
a. not at all.	4
b. a little.	41
c. a lot.	55
Total	100

TABLE 10.1

Question: If a reading improvement course were offered at college on a voluntary basis would you attend it?

	Percentage
	<u>N = 300</u>
a. yes.	41
b. no.	8
c. maybe.	51
Total	<u>100</u>

TABLE 10.2

Question: Has your reading ability improved since you have been at college?

	Percentage
	<u>N = 281</u>
a. not at all.	15
b. a little.	71
c. a lot.	14
Total	<u>100</u>

TABLE 10.3

Question: How would you rate your reading ability compared, for example, with other college students?

	Percentage
	N = 287
a. worse.	17
b. about the same.	73
c. better.	10
Total	100

It can be seen from Table 10.0 that the majority of students responding to this questionnaire thought that they could improve their reading ability 'a little' (41 per cent) or 'a lot' (55 per cent), and that from Table 10.1 only 8 per cent were certain that they would not voluntarily attend a reading improvement course if it were offered.

From Table 10.2 it can be seen that a total of 85 per cent thought that their reading had improved 'a little' (71 per cent) or 'a lot' (14 per cent) since they had been at College.

f. Student opinion concerning directed reading.

To obtain a frank statement of opinion about the values students saw in directed reading as a technique for guiding their textbook reading a 'limited free response' kind of

question was asked. Responses were classified into four broad and discreet categories: favourable, unfavourable, ambivalent, no comment.

TABLE 11.0

Direction: Would you outline in your own words what you think of 'directed reading' (specific questions and directions) as a means of guiding your own textbook reading.

	Percentage
	<u>N = 160</u>
a. favourable.	69
b. unfavourable.	14
c. ambivalent.	3
d. no comment.	<u>14</u>
Total	<u>100</u>

For recording purposes, the questionnaires were numbered consecutively. A random sample of their verbatim responses has been included under three headings of favourable, unfavourable, and ambivalent, in Appendix Q.

g. Amount of required reading done.

The question set out to determine how much required reading was done by students in the course, which made extensive use of 'directed reading' as compared with the amount of required read-

ing done by the total first year student population. This question was included for the final two groups questionnaired in 1970.

TABLE 12.0

Question: How much of the required reading for the Reading Syllabus Study Course would you estimate that you did?

	Percentage
	<u>N = 159</u>
a. none.	1
b. some.	9
c. most.	52
d. all.	<u>38</u>
Total	<u>100</u>

Of these students 90 per cent involved in the Reading Syllabus Study course estimated that they did 'all' (38 per cent) or 'most' (52 per cent) of their required reading.

## 2. The College Reading Questionnaire.

The College Reading Questionnaire results directly related to this thesis have been reported in six main areas: the amount of required reading done, factors influencing students' reading of required textbooks, student opinion about their reading

improvement, what factors have contributed to the students' reading improvement, those factors seen as detracting from students' ability to read effectively, and the methods usually employed by college lecturers for directing required reading and the resultant action taken by students.

a. Amount of required reading done.

This question was designed to discover in general terms how much of their required reading students estimated they did for their college courses, and to compare the results obtained with the results already reported in Table 12.0 for the Reading Syllabus Study Questionnaire.

TABLE 13.0

Question: How much of the required reading do you estimate that you do?

	Percentage
	N = 611
a. little.	11
b. some.	41
c. most.	46
d. all.	2
Total	100

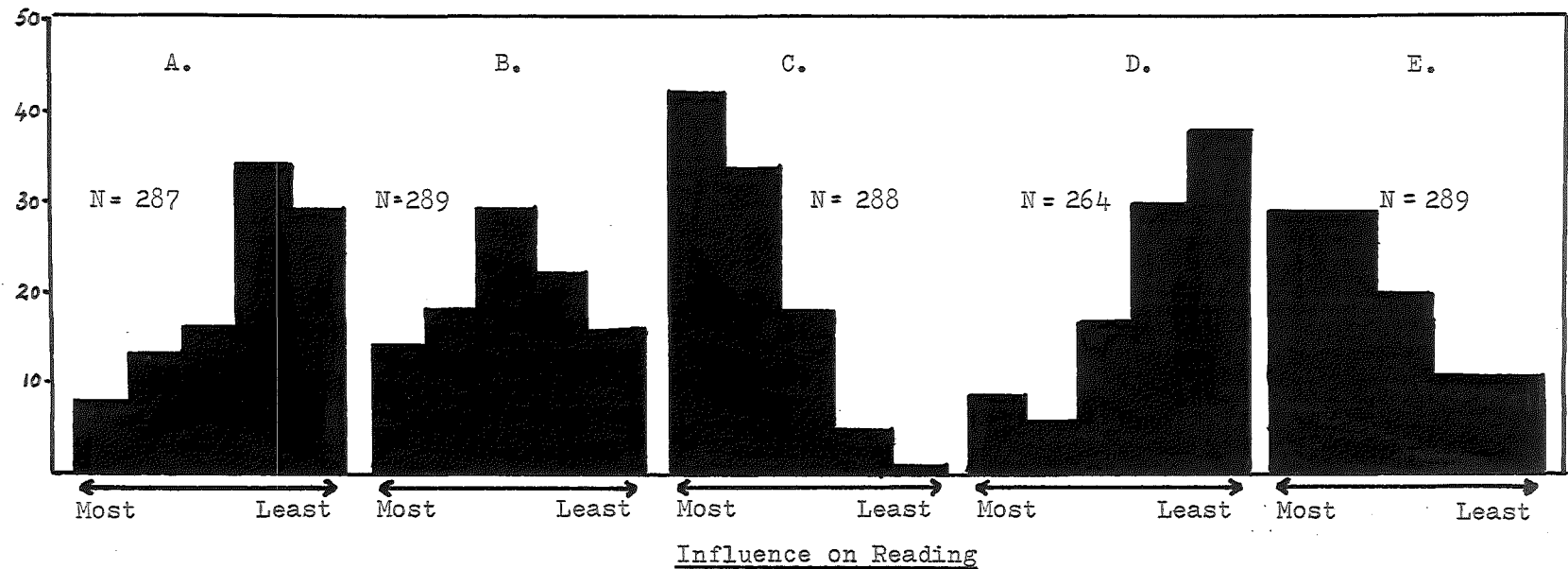
When these results are compared with those in Table 12.0 it can be seen that 48 per cent of the total 1969 and 1970 first year student populations estimated that they did 'most' or 'all' of their required reading, whereas 90 per cent of those students taking the Reading Syllabus Study fell into this combined category. It could be expected that when students are asked to estimate the amount of required reading they did for a large number of courses covering a range of subjects and lasting over a period of two semesters their estimates would fall below what they might report for a single course in one subject area lasting for only one semester. Despite the effects of these factors, however, the differences in the amount of required reading done by the total college population of first year students is much less than that done by those students taking the Reading Syllabus Study course.

b. Factors influencing students' reading of course textbooks.

The first question in the 1969 form of College Reading Questionnaire was a structured response with a free option type of question where the students were required to rank five categories with the 'free option' forming a sixth category. So few students used this category, however, that it was not included in the analysis. Those students who did use it entered a comment concerning 'reading for the purposes of preparing for discussion', so this category was added to the structured responses for the 1970 form of the questionnaire and the free option was removed. The five point ranking scale of

FIGURE 6.0

COLLEGE READING QUESTIONNAIRE ( 1969 ): WHAT USUALLY CAUSES YOU TO READ YOUR TEXTBOOKS?\*



KEY

- A. By being directed to read by specific pages or chapters.
- B. By being required to read for exams or tests.
- C. By Having to do research-type reading for assignment purposes.
- D. By being interested in a particular topic.
- E. By being directed to required reading through questions for which written answers have to be recorded.

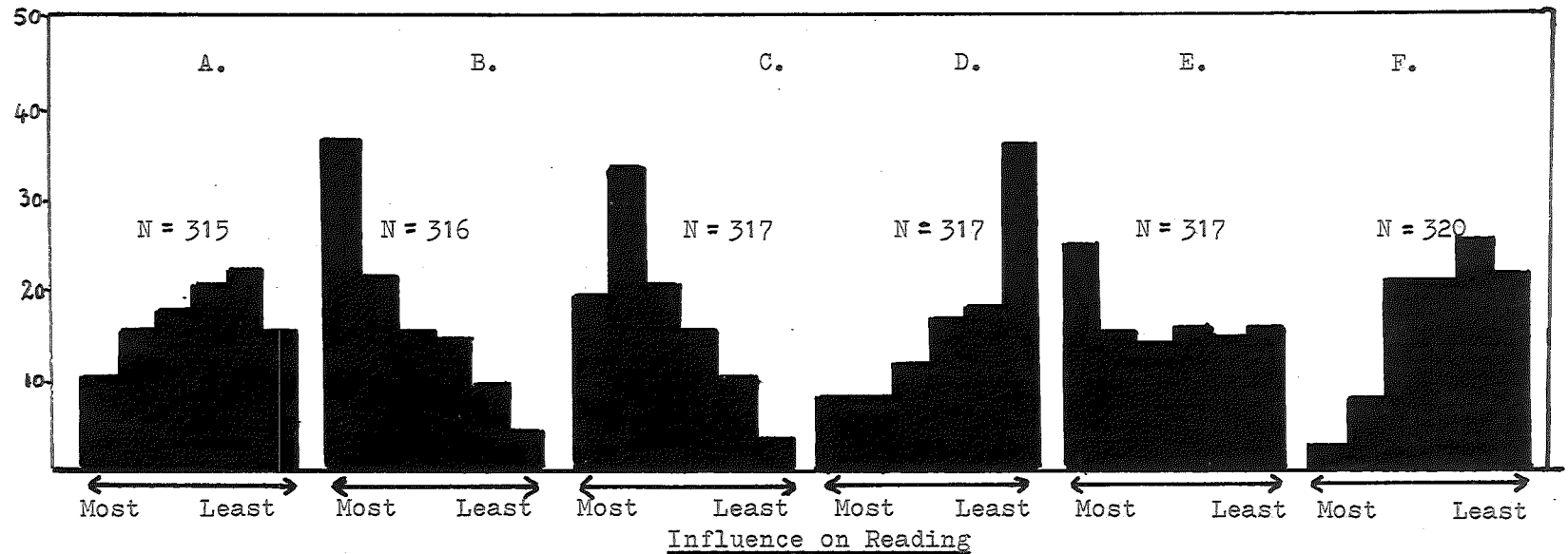
\*Directions for the question.

Please RANK these factors in the order of their influence on causing you to do your required textbook reading with (1) being the most influential and (5) being the least. Place the numbers from 1 to 5 in the brackets corresponding to the degree of influence on you of each factor.



FIGURE 6.1

COLLEGE READING QUESTIONNAIRE ( 1970 ): WHAT USUALLY CAUSES YOU TO READ YOUR TEXTBOOKS?\*



KEY.

- A. By being directed to read by specific pages or chapters.
- B. By being required to read for exams or tests.
- C. By having to do research-type reading for assignment purposes.
- D. By being interested in a particular topic.
- E. By having study guides or course outlines for required reading in the form of questions or directions.
- F. By having to read as preparation for discussion.

\* (Directions for the question).

Please RANK these factors in the order of their influence on causing you to do your required Textbook reading with (1) being the most influential and (6) being the least. Place the numbers from 1 to 6 in the brackets corresponding to the degree of influence on you of each factor.

the 1969 form was therefore changed to a six-point ranking scale in the 1970 form. The aim of the ranking was to identify those purposes which had the most influence in causing students to carry out their required reading and those purposes which had the least influence. The results obtained have been reported in histogram form.

Figures 6.0 and 6.1 indicate that having to do research-type reading for assignment purposes, and being directed to required reading by questions and directions, had positively influenced students to do their required reading. Being required to read for exams or tests had a positive effect on the 1970 first year students, but for the 1969 student intake this factor had both a positive and negative influence of approximately the same proportions.

The factor that had the least influence in causing students to do their required reading was interest in a particular topic. Being directed to read specific pages and chapters and having to read as preparation for discussion purposes also appear to have little effect in causing students to read their textbooks.

#### c. Student reading improvement.

The three questions concerning reading improvement were identical to those in the Reading Syllabus Study questionnaire and were included for the same purposes. Since the populations taking part in these surveys were the same, the results obtained from both questionnaires for these questions could provide a measure of the reliability of the student responses. In order

that the results can be compared easily, the Reading Syllabus Study figures have been included in these tables.

TABLE 14.0

Question: Do you think you could improve your general reading ability?

	Percentage	
	College	Syllabus
	N = 611	N = 307
a. not at all.	2	4
b. a little.	55	41
c. a lot.	43	55
Totals	100	100

TABLE 14.1

Question: If a reading improvement course were offered at college on a voluntary basis would you attend it?

	Percentage	
	College	Syllabus
	N = 610	N = 300
a. yes.	29	41
b. no.	13	8
c. maybe.	58	51
Totals	100	100

TABLE 14.2

Question: Has your reading ability improved since you have been at college?

	Percentage	
	College	Syllabus
	N = 611	N = 281
a. not at all.	14	15
b. a little.	74	71
c. a lot.	12	14
Totals	100	100

When the results obtained from both questionnaires are compared they demonstrate a consistency of choice made by the students in their responses. It is evident that the majority (98 and 96 per cent) of students think that they could improve their reading ability 'a little' or 'a lot'; the majority (87 and 92 per cent) might or would attend a voluntary reading improvement course and that the majority (86 and 85 per cent) think that their reading ability had improved 'a little' or 'a lot' since they had been at college.

d. Factors seen by students as contributing to their reading improvement.

This question was of the totally structured response kind and was included for two main purposes related to this thesis:

to determine the percentage of students who selected 'directed reading' as one of the factors which had contributed to any reading improvement they felt had been made, and to determine which general factors had contributed to any felt reading improvement.

It should be noted when studying the results of the responses made to the factor concerning 'directed reading' that only fifty per cent of those students taking part in this survey would have made extensive use of this technique in one course only (Reading Syllabus Study). Another twenty-five per cent approximately would have had more limited experience with 'directed reading' through taking Science and/or Language Syllabus Studies. The percentage of students choosing this category, however, has been calculated using the total N of 612 as the denominator.

It should also be noted that, whereas the students were asked to indicate those factors which had 'contributed' or 'contributed most' to any improvement in their reading ability, only the total number of responses for each category has been reported here.

Although 'university studies' received the highest percentage of student choices, it should be noted that at least seven of the factors listed could be subsumed under this 'factor' and because of this it should not have been included in the list in that form. It should have been a separate question directed specifically at students taking concurrent university studies, with the same factors listed as in Table 15.0.

TABLE 15.0

Direction: The following factors have been identified by other college students as contributing to their reading improvement. Place a check (✓) beside any of these factors which you feel has contributed to any improvement in your own reading ability this year. You should double check (✓) any factor which you feel has contributed most.

	Percentage
	<u>N = 612</u>
a. by having to read for tests and exams.	61
b. university studies (N = 207).	79
c. by being required to summarise certain sections.	49
d. by having to do research-type reading for assignment purposes.	75
e. by being directed to read certain sections of the texts carefully and noting particular points.	49
f. "Study Techniques" course.	8
g. by being given directed reading for certain topics in the form of written questions which required you to locate answers.	61
h. found textbooks more interesting than previously.	25
i. by being given specific assistance for required reading by lecturers.	9
j. by being required to do more reading from more textbooks than previously. (N = 290 included in 1970 form only.)	59

The factors which students consider contribute most to their reading improvement were: having to do research-type

reading for assignment purposes (75 per cent), having to read for tests and examinations (61 per cent), being given directed reading for certain topics in the form of written questions which required the location of answers (61 per cent), and by being required to do more reading from more textbooks than previously (59 per cent). The first three of these factors were similarly ranked by students in response to the question reported in Figures 6.0 and 6.1 concerning what influenced them to read their textbooks. The final factor was not listed in that question.

e. Factors seen by students as detracting from their ability to read effectively.

This question was of the totally structured response kind with a free option. Since the free option category was not used by students it was deleted from the results.

The question was included in the questionnaire for two main reasons. Firstly, to determine what percentage of students would report having difficulty in concentrating on what is being read (since one of the uses seen for adjunct questions for guiding textbook reading is that they may serve the purpose of simply keeping the reader at the task and awake), and secondly the question was included to obtain information about the kinds of factors which cause students to experience difficulty in reading so that any reading improvement procedures instituted could concentrate on specific problems.

Although students were asked to indicate those factors which had detracted from their ability to read effectively and those which had had a serious effect, only the total number of responses for each category have been reported here.

The results obtained indicate that 69 per cent of first year students have difficulty in maintaining their concentration on their reading tasks, and that 55 per cent 'regress' frequently. Although the order of 'factors causing difficulty' was reversed from the 1969 to the 1970 form of the questionnaire, this made little difference to the percentage of students responding to each category.



TABLE 16.0

Direction: The following is a list of specific factors that may cause difficulty in reading. Place a check (✓) beside any of the factors that you feel detract from your ability to read effectively. Double check (✓) any factor which you think has a serious effect.

	Percentage
	<u>N = 612</u>
a. have difficulty in concentrating on what is being read and get to the bottom of the page and find your mind on 'other things'.	69
b. tend to 'regress' frequently (looking back over what has been read due mainly to loss of meaning).	55
c. tend to 'sub-vocalise' (read the words aloud to myself - 'internalised speech').	24
d. always read at the same speed.	14
e. tend to read only because I am told and do not establish my own purposes for what I am required to read.	26
f. do not like reading.	6
g. suffer from 'verbalism' (slipping over words and ideas and not understanding them).	36
h. have no effective method of reading a chapter.	18
i. do not read enough.	29
j. read too slowly.	30
k. generally have difficulty in comprehending what is read.	16
l. experience difficulty in identifying key ideas and supporting details.	26
m. personal reading vocabulary is not sufficiently extensive.	26

- f. Methods usually employed by college lecturers for assigning required reading and the resultant action taken by students.

This question was also included in the Reading Syllabus Study questionnaire and the results have been reported in Tables 9.0 and 9.1. It was included only in the 1969 form of the College Reading Questionnaire as a limited free response type of question, but for the 1970 form a totally structured response question was constructed. However, the question was found to be too complex for students to interpret and the analysis of the results was not continued.

In the analysis of the verbatim responses made by students on the 1969 form of the question a count was made of the number of students who reported that they were usually directed to their required reading by 'being instructed to read certain pages or chapters'. This category included responses made by those students who indicated that they had been directed in this manner, it being stated that they 'would' or 'might' be tested on the required reading. Only two other clearly distinguishable categories could be determined: those students who had been directed by questions, and those who had been directed to read specific topics for discussion purposes. The remainder included responses which could not be readily categorized and these have been included in the table under the heading 'mixed responses'.

The question also asked students to indicate how they carried out their assigned reading. A limited but typical sample of the students' verbatim responses has been included in Appendix P

TABLE 17.0

Question: How are you usually directed to do any required reading? State what action you usually take.

	Percentage
	N = 230
a. given page numbers or chapters to read (sometimes for a test).	82
b. given questions as guides for our reading.	5
c. given topics to study for discussion purposes.	3
d. mixed responses.	10
Total	100

When the results obtained for this question are compared with those obtained on the same question in the Reading Syllabus Study Questionnaire (Table 9.0) it can be seen that they are similar. On the College Reading question, 82 per cent of students indicated that they had been directed to read by page numbers or chapters. This figure included those students who had indicated that they had been directed in this way for a test. The percentage for this combined category for those students

completing the Reading Syllabus Study question was 91 per cent.

When these results are compared with those reported in Table 9.1 for the totally structured response question which was included in the final form of the 1970 Reading Syllabus Study Questionnaire it can be seen that they are similar. When the categories for page number or chapter direction are combined with the 'test direction' one, the figure of 83 per cent is achieved.

It would therefore seem reasonable to assume that the results obtained for this question are consistent and that during 1969 and 1970 the majority of first year students attending the Christchurch Teachers' College were being directed to their required reading by being given page number and chapter references.

## CHAPTER VI

DISCUSSION, CONCLUSIONS, IMPLICATIONS,  
LIMITATIONS AND SUGGESTIONS FOR  
FURTHER RESEARCH

## Introduction

In this chapter the results presented in the previous chapter will be discussed, conclusions in relation to the statement of the original problem will be summarised, the implications of the results obtained for guiding and directing reading of textual materials will be stated, and the limitations of the present study and suggestions for further research will be outlined.

One of the problems associated with experiments of the kind where participating students have to be put on trust to follow certain essential procedures is the difficulty of knowing whether or not they have in fact followed the investigator's instructions. In the experiments reported in this thesis involving the use of pre and post adjunct questions, it was important to know whether or not the students have actually used the questions in the stated positions relevant to their reading. An examination of the hypotheses, the tables and figures, and the subsequent observations relevant to the time taken for the reading task by the different groups, reveals that the time taken was in the predicted direction and the variances reported were all highly significant. It would

appear reasonable to assume, therefore, that the majority of students in each group read the textual materials according to the instructions issued.

Product moment correlations between pairs of raters for the essay type answers were calculated using 136 randomly chosen sets of scores for first, second and third year students. These correlations ranged from .80 to .97. The possibility of obtaining high inter-rater correlations was referred to on page 115 of this investigation. A further factor which contributed to these strong correlations was that the three raters met on several occasions after marking a number of answers and analysed their assessments for these answers. From these discussions a checklist-type marking guide was arrived at. This checklist did not include any marks being awarded for style, so subjectivity of marking was further reduced. The means and standard deviations for each rater's marks, for each experimental group, are recorded in Appendix V.

#### A. Discussion of Results

##### 1. Adjunct Factual Questions.

Before discussing the results obtained with first, second and third year students for the experiments related to factual questions, it is necessary to report that the second year student experimental groups suffered from what could be termed an 'institutional effect' and a 'research assistant effect' during the reading of the textual materials. After

approximately fifty minutes of the post factual group's reading time had elapsed they were interrupted for several minutes by another college group wanting to use the room due to a time-tabling error. The same group were also given a 'five minute break' after this interruption, by the college lecturer who was assisting with the research by supervising this group, although this had not been included in his administrative instructions. No other groups were given this rest period during the experiment.

Approximately a third of the pre factual group were also disturbed while they were completing the immediate post test by another group wanting to use the room. This caused these students to take less time over their remaining questions than they may have normally done, with a possible subsequent lowering of their achievement scores. The 'read carefully' group, on the other hand, received no interruptions.

It would appear likely that these interruptions to the question guided groups may have significantly affected the reliability of the results obtained on the subsequent post tests by the second year experimental groups. This in turn would have affected the results obtained when the first, second and third year experimental groups' residual mean achievement scores were collapsed and compared for the different treatment effects.

Figures 7.0 and 7.1 have been constructed from the analyses of variance summaries of the residual achievement scores reported in the previous chapter in order that comparisons by

FIGURE 7.0

RESIDUAL MEANS FOR FIRST, SECOND, AND THIRD YEAR STUDENTS DIRECTED TO READ CAREFULLY OR BY PRE OR POST  
ADJUNCT QUESTIONS FOR THE FIRST, SECOND, THIRD AND TOTAL POST TEST SCORES, UNCORRECTED FOR TIME.

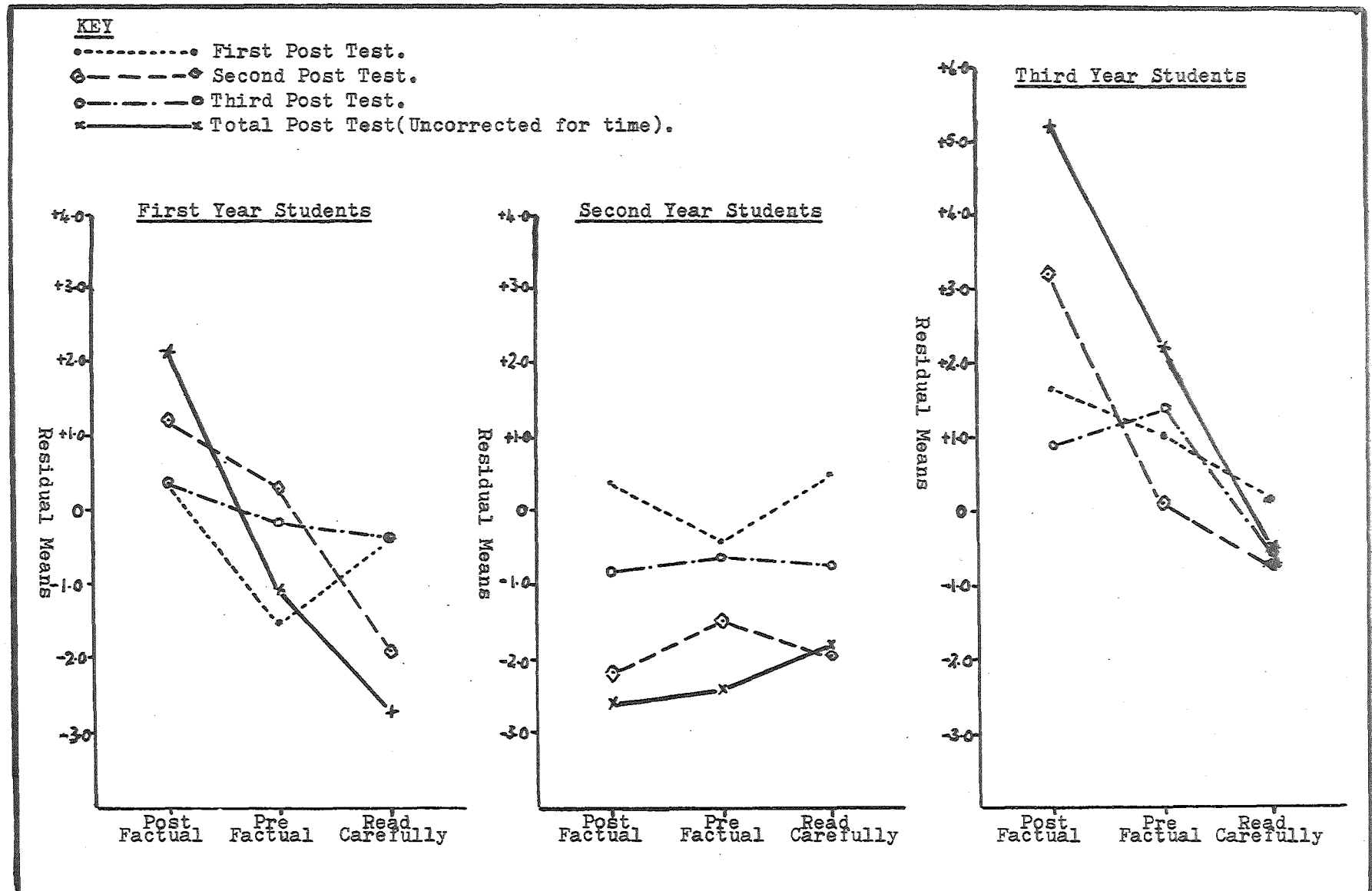
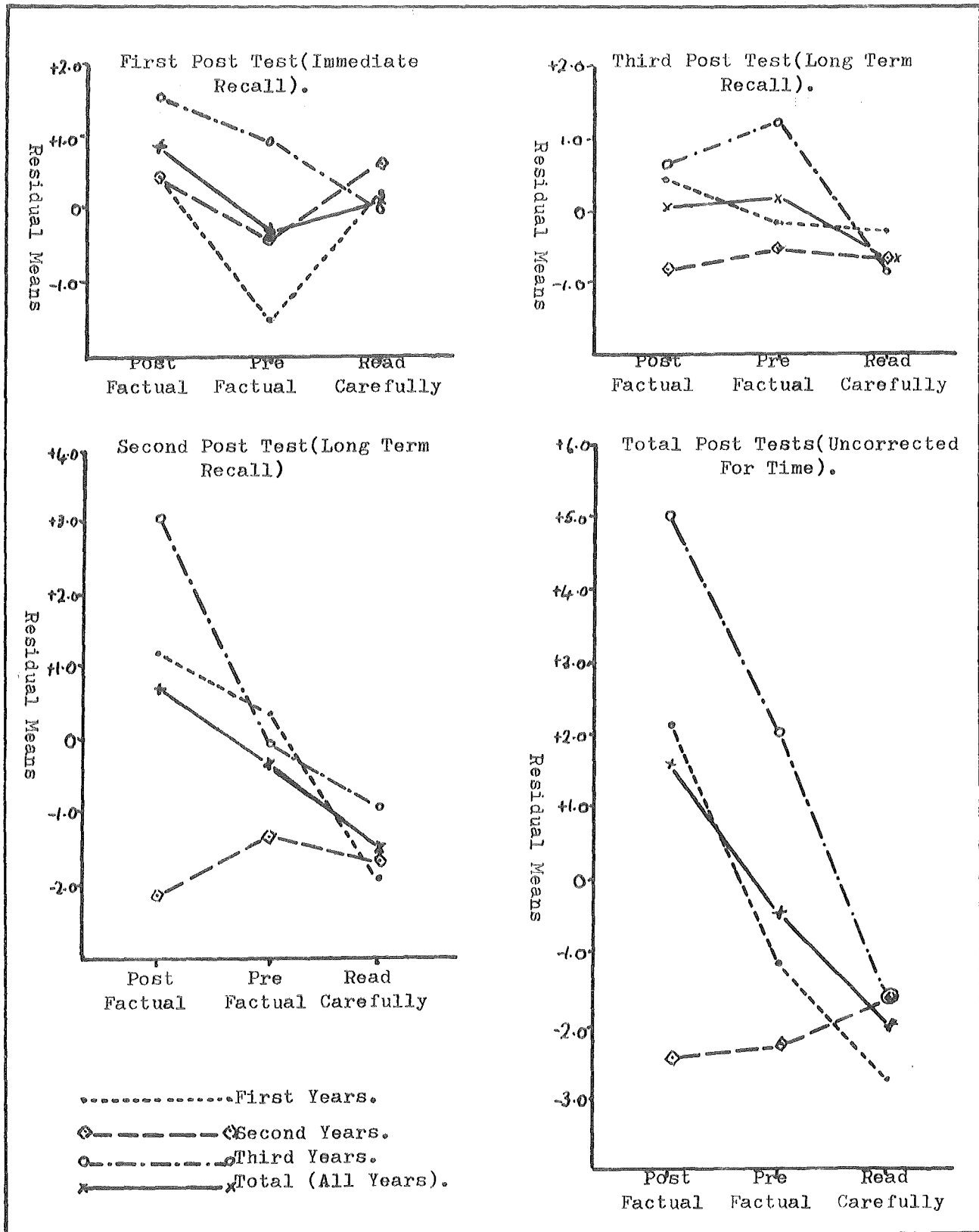




FIGURE 7.1

RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST, SECOND, THIRD AND TOTAL POST TESTS (UNCORRECTED FOR TIME) FOR FIRST, SECOND AND THIRD YEAR STUDENTS.



year (Figure 7.0) and by post test (Figure 7.1) can be made more readily.

It can be seen by Figure 7.0 that the second year results vary considerably from those recorded for the first and third year results for the first, second, third and total post test scores. Whereas for each of these groups seven out of the eight comparisons are in the predicted direction, for the second year groups, only two of the eight fall into this category.

Consideration was given at the time of the processing of the results to excluding the second year student groups' scores from the analysis but this would have prevented a 3 x 3 analysis of variance being carried out, so it was decided to proceed as planned and report the occurrence of the problem in this section of the research report.

The results discussed in this section have been presented in Chapter Five. All the results obtained from the first series of experiments will be commented on and those sections of the second series dealing with factual questions will be referred to. Tables and Figures 2.1 to 2.6 and 3.1 to 3.5, and hypotheses one (a) and (b), two (a) and (b) and three are relevant to this section of the discussion.

a. The first post test.

For the first post test (immediate recall) the only significant difference ( $p < .05$ ) present was between the residual mean achievement scores of the pre and post factual

question groups in favour of the latter. Adjunct questions in the post reading position may, according to Frase (1967) have two main functions. They may cause the reader to review what he has just read in order to find the answer to the question. This would result in the question acting in a 'backward' manner, therefore facilitating retention. If the amount of material to be read before the question was reached was extensive (as was the case in this experiment), the review or backward effect of the post questions would be even more likely to occur. The second function of the post question, and according to Rothkopf (1968) the more important one, may be for them to operate in a forward manner, therefore optimizing the 'mathemagenic' behaviour of the reader, that is, they may have the effect of increasing the range of attending behaviours, thereby increasing the likelihood of a wider range of information being retained than is required by the question.

One of the critical variables in most of the experiments involving pre factual questions has been whether the post test items have been question relevant or not. Because of the length of the material to be read it was difficult to construct adjunct factual questions or directions which required only one answer. Some questions, for example, asked the reader to "list the main factors ...". This in turn reduced the control exerted over maintaining the objective-type test items as specifically question relevant to the adjunct questions.

The fact that the post factual effect was significantly superior to the pre factual one and that the pre factual scores

were depressed below those of the 'read carefully' groups (although not significantly), may indicate that the control over the question relevancy of the test items was not sufficiently rigorous.

The hypothesis relating to the predicted superiority of the post factual treatment over directing students to read carefully was not sustained by the first post test comparisons either, although the majority of the investigations reported in the review of the literature had consistently supported this prediction. It seems likely, however, from an inspection of Figure 7.0 (First Post Test), that the amount of the variance between the third year group's post factual and read carefully mean residual scores, would have reached the five per cent level of significance.

The majority of researches involving post and pre factual questions and directions to read carefully have used relatively short (700 to 3,000 words) passages. These have often been chosen because of their unrelatedness to the courses being undertaken by the students involved in the experiments and their relatively heavy factual content. This study used a lengthy (7,700 words) and complex chapter of a book being used by the students in the course of their studies. A research by Pyper (1968) referred to in pages 73-4 of this investigation also used a lengthy (7,200 words) passage, and also had experimental groups using adjunct factual questions and control groups directed to read carefully. No significant differences between the treatment effects were observed. Although Pyper

reported his doubts concerning the reliability of his findings due to the unforeseen effects of some uncontrolled variables, his results are similar to those reported for the first post test in this investigation.

The length of the material to be read and its course imbedded nature may have been two variables acting to reduce the facilitative effects of adjunct questions in prose materials. Other possible reasons for these post test results being inconsistent with previous findings will be advanced when the effects of the reasoning questions are discussed.

b. The second post test.

The results of the second post test (essay-type, long-term retention) indicate that post factual questions significantly facilitate retention of key ideas and their explanations when compared with the effects of directing students to 'read carefully'. When the treatment effects on the first year groups only are compared (Table 3.2) both the pre and post factual treatments are significantly more effective for long-term retention than 'read carefully'. Had the second year groups' scores been excluded, for reasons previously stated, and the first and third year scores been combined for comparative purposes, it would seem likely that the differences would have reached the five per cent level of significance in the predicted direction, with post factual superior to pre factual and with the latter superior to 'read carefully'.

For the long-term recall of key ideas and their explanations from prose materials when the subjects have to construct their own answers, it appears that adjunct factual questions have a significant facilitative effect and that the post factual treatment is the most effective procedure of the three compared here. This superior effect, however, may have been the result of the post factual group being required to construct a specific, written (overt) response for each question as they read, whereas the pre factual and read carefully groups had the option of recording answers or taking notes. In fact, very few of them did so. Anderson's (1970) conclusions, reported on page 87 of this thesis, concerning the effect of having the learner construct his own response to questions rather than select his answer from a series of alternatives, may well be relevant here. He found that requiring the subjects to do the processing facilitated question relevant learning.

c. The third post test.

The long-term (ten weeks) retention third post test was a repeat of the first objective-type post test. It was expected that, although scores achieved by each group would probably be lower due to the rate of forgetting, the positions of each group in relation to each other would not significantly alter from those seen on the first post test.

On the first post test the only significant difference was in favour of the post factual group over the pre factual. The

predicted superiority of the pre factual over the read carefully groups did not eventuate and in fact the variance between the residual mean achievement scores was in the opposite direction to that predicted. On the third post test, however, the only significant difference was between the pre factual and read carefully groups, in favour of the former. An examination of Figures 7.0 and 7.1 reveals that positions of the groups in relation to each other altered quite considerably from the first to the third post test. However, if, as has been suggested, the second year results had not been included in the analysis, it would appear that the borderline difference would have become stronger between the pre factual and read carefully groups and there would have been a significant difference at the five per cent level between the post factual and read carefully group also.

The rather dramatic change in the position of the pre factual group compared with the read carefully group, and the less significant move of the combined first and third year post factual, may have resulted from Natkin & Stahlers (1969) 'high arousal effect' of adjunct questions reported in Chapter Three (page 82) of this thesis.

d. The total post test scores not corrected for time.

The total post test scores, not corrected for time, show that the significant effect of the post factual treatment over the read carefully treatment is maintained. Again, had the first and third year scores only been combined it appears

almost certain that the pre factual treatment effect over the 'read carefully' treatment would have reached the significant level in the hypothesized direction. The treatment effect for these two groups was clearly and consistently in the predicted direction.

e. The total post test scores corrected for time.

When the total post test scores were corrected for the significant time effect, the post factual treatment effect no longer reached the five per cent level of significance. The conclusion reached by Peeck (1970) and reported on page 91 of this thesis concerning the effects of equalising the time spent on reading are therefore supported.

f. The effects of questions and directions for reading on time taken.

The highly significant differences in the time taken for reading between the three treatment groups were all in the predicted direction. The findings of Rothkopf & Bisbicos (1967) and those of Frase, Patrick and Schumer (1970) were similar, with the post factual groups taking significantly longer than either of the two other groups because of the 'backward' and 'forward' effect of questions in this position, and the pre factual groups taking longer than the read carefully resulting from the inspection activities of the reader relative to the question.



## 2. Adjunct Reasoning Questions.

The results discussed in this section were obtained from the second series of experiments reported in Chapter Five, in Tables and Figures 3.1 to 3.5. Two additional graphs have been constructed from these results, in order to facilitate this discussion. Figure 3.0 shows the residual achievement scores for the five treatments on the three post tests, uncorrected for the effects of time. Figure 3.1 shows the residual achievement scores for the five treatments for the total of the post tests, uncorrected and corrected for the effects of time.

### a. Pre reasoning.

The results obtained from the comparisons made between the five treatment groups clearly indicate that, with the exception of those for the first (immediate) post test, pre reasoning questions have a significant and sometimes a highly significant facilitative effect on learning and retention of question relevant (objective-type test results) and question irrelevant information (essay-type test results). With the exception of the first post test results, the effect of this treatment was consistently maintained over all other treatments.

This was a particularly interesting result since the usual conclusion made by researchers such as Rothkopf (1970), Frase (1968a, 1970) and Bruning (1968), for example, has been that post questions usually have a greater facilitative effect on learning and retention than pre questions. This has been especially notable when question irrelevant information has been tested.

FIGURE 8.0

RESIDUAL ACHIEVEMENT SCORES FOR THE FIRST, SECOND AND THIRD POST TESTS FOR THE FIVE TREATMENT GROUPS (FIRST YEAR STUDENTS).

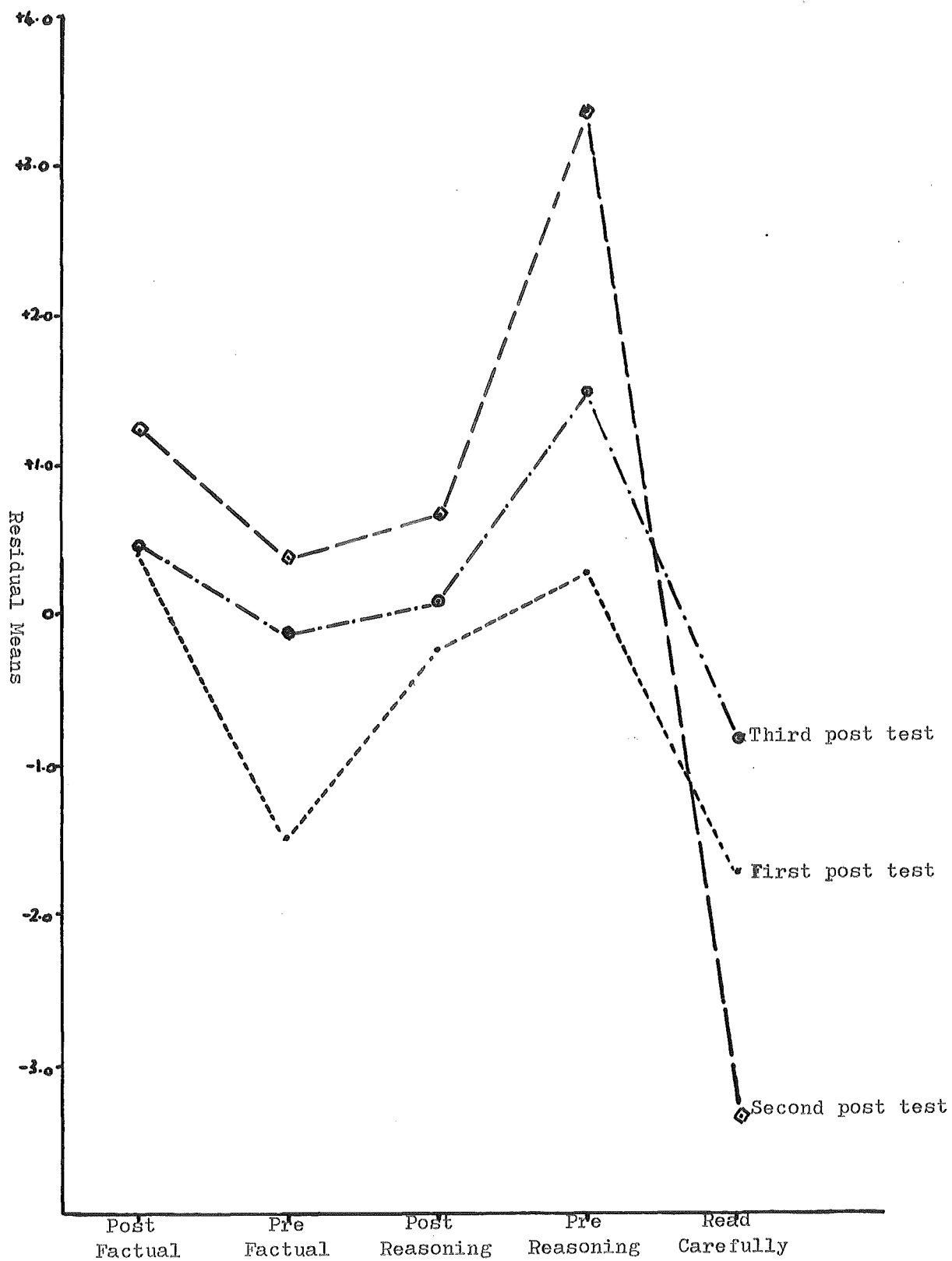
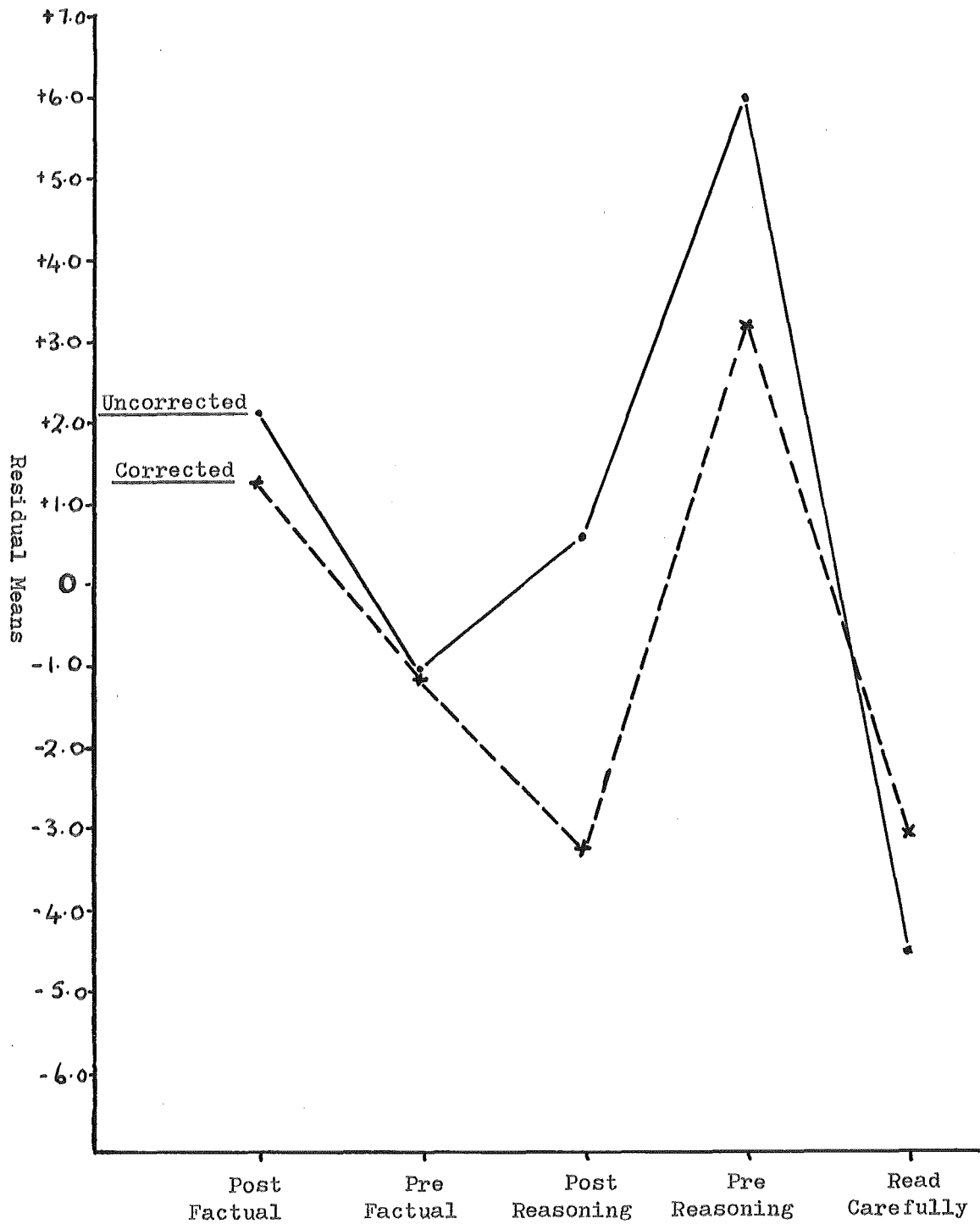


FIGURE 8.1

RESIDUAL ACHIEVEMENT SCORES FOR THE TOTAL POST TESTS FOR THE FIVE  
TREATMENT GROUPS UNCORRECTED AND CORRECTED  
FOR TIME



On the first post test there were no significant treatment effects between any of the five groups (pre and post reasoning, pre and post factual, and read carefully), although the post factual and the pre reasoning groups had the highest residual mean achievement scores.

On the second post test (essay-type, delayed retention) the superiority of the pre reasoning treatment was clearly displayed by a highly significant difference in the comparison made with the read carefully treatment, and a significant difference in the comparison with the pre factual and post reasoning treatments. Although the difference between post factual and pre reasoning did not reach the five per cent level of significance the pre reasoning treatment was superior.

It would seem as though the conclusions drawn by Frase (1969) related to the facilitative effect on memory of the higher order processing required by reasoning-type orienting directions, may have been supported by the results obtained on this post test.

The highly significant treatment effect of pre reasoning questions on the essay-type post test may have been partly the result of the higher order questions requiring the students to construct quite complex and lengthy written answers. This also caused a significant increase in the time taken by this group for the reading task, except when compared with the post reasoning group. However, the effect of these two variables ('time taken' and 'overt response construction') should also be

seen in the post reasoning group's position in relation to the post factual, for example, since the post reasoning group took even longer to complete the task and had to construct similar overt responses. An examination of Figure 8.0 for the first and second post test results shows that, in fact, the post factual and the post reasoning relative positions remained almost identical for these two post tests.

The results of the third post test indicated that the pre reasoning treatment was the only one to maintain a significant effect over 'read carefully'. It also obtained a significantly higher residual mean achievement score than the pre factual treatment.

The explanation for the appearance of this significant treatment effect on the same post test delayed by ten weeks may again lie in the conclusions reached by Natkin & Stahler (1969) concerning the high arousal effects of no pre exposure to adjunct questions depressing immediate recall and improving delayed retention. It is interesting to note here that the pre factual group made an almost identical but not significant shift from the first to the third post test results, as the pre reasoning group. On the other hand the post factual and post reasoning group positions in relation to the read carefully group weakened. The arousal effect of Natkin & Stahler, then, may be a function of question position as well as the amount of pre exposure to questions.

When the three post tests were totalled it could therefore be expected that the pre reasoning treatment would again have the greatest facilitative effect, increasing the amount of difference between it and the other treatment effects by the process of aggregation. This proved to be the case. There were highly significant differences recorded between the pre reasoning and read carefully and the pre reasoning and pre factual treatment effects, with a significant difference between the pre reasoning and post reasoning. The difference between the pre reasoning and post factual treatment effects, although not significant, was also in favour of pre reasoning.

It could have been expected that the effects of the correction for the considerably longer period of time taken by the pre reasoning group (except when compared with post reasoning) would have caused the significant treatment effect to be lost, when comparisons were made with the pre and post factual and read carefully total post test scores. The significant effect, however, was retained over the read carefully group but at a lower level and the difference between the effects of the pre reasoning and pre factual treatments was no longer significant. As could be expected from the correction made for time in favour of the pre reasoning group when compared with post reasoning, the difference between the facilitative effects of these two treatments was made highly significant in favour of pre reasoning.

The pre reasoning treatment, then, has been seen to have a

consistently superior facilitative effect on learning and retention from prose materials on all except the first (immediate) post test measure. Although previous researches have shown that adjunct questions usually facilitate question relevant learning, there were no significant differences between the five treatment effects on the first post test. Each or all of the following reasons may explain this absence of significant treatment effects on this post test.

Reference has already been made to the possible effects of the length of the material, its course imbedded nature, the difficulty of rigorously controlling the question relevance of the test items, and the effects of 'high arousal' and 'low arousal' condition.

Coupled with the 'high arousal' condition, however, could go the effects of fatigue on the immediate post test performance caused by the length of the materials to be read, the number of questions to be answered, and in the case of the pre reasoning and post and factual and reasoning groups, the constructing and writing of responses to the questions. The sustained, concentrated approach of those students using these procedures was quite noticeable, particularly in the post reasoning and pre reasoning groups. The effect of concentrating on an extended, demanding reading task, completing it, and then having to read and answer 26 objective-type questions could well have been to cause facilitative effects of the adjunct questions to be lost through sheer fatigue.

A further factor influencing the amount of variance present in the scores achieved on any test lies in the quality of the test instrument itself. Although the 26 item objective-type test used for the first and third post test had been subject to pilot testing, item analysis procedures, checking by other lecturers and rewriting, it still needed further refinement in the opinion of this investigator. Time did not permit this to occur. Because of this the test may not have discriminated sufficiently and so caused the amount of variance possible on the post test achievement scores through the different treatment effects to be reduced.

The final factor to be commented on here concerns question frequency. The conclusion reached by Natkin & Stahler (1969) and Frase (1967) was that, for short term retention of information from prose material, questions should be 'liberally supplied'. It would appear that in this experiment questions may have been used too sparingly (one per 300 words on the average) to allow for significant differences to occur between the question guided and the read carefully groups on the short term retention measure.

b. Post reasoning.

Comparisons of the residual mean achievement scores for the five treatments indicates that the post reasoning treatment had a significant facilitative effect on learning and retention when compared with the read carefully treatment on the second post test and total post test scores uncorrected for time.



The results of this treatment bore a close resemblance to those achieved by the post factual treatment, except for the variable of time where the post reasoning group took considerably longer than any other group to complete the reading task.

Comment has already been made concerning the absence of any significant difference in the treatment effects occurring on the first post test. The 'fatigue' effect was probably greatest for this group due to their significantly longer reading time. Some indication of this may be given by the fact that whereas the post factual group's position was depressed in relation to the other treatment groups from the first post test to the third, the post reasoning group's position improved.

On the second post test the significant treatment effect of the post reasoning and post factual groups were similar when compared with 'read carefully'. This would seem to indicate that the increased cognitive processing and overt responding required by reasoning questions in the post reading position does not have an any greater facilitative effect on long term retention than the post factual treatment. The significant variable here would seem to be the placement of the question.

The absence of significant treatment effects on the third post test for both post questioning groups when compared with the read carefully treatment is not consistent with the results reported for previous studies in this area. It can hardly be related to the 'high arousal' effect referred to in relation to the pre questioning treatment effects since the position of the

post questioning groups did not improve in relation to the other treatment groups. The problem may be in the effects of two variables, both related to the amount of material to be processed.

The first, concerning frequency of question placement, has already been referred to in the previous section, where the results of previous experiments seem to confirm a small step approach to inserting questions for specific retention and a large step approach for general retention.

The second problem may be in the superior facilitative effect of post factual questions on learning question irrelevant information when compared with the effects of pre factual questions, demonstrated through studies conducted by Peeck (1970), Frase (1968a), Rothkopf (1970) and Bruning (1968). Post factual questions facilitate the learning of question irrelevant information according to these investigators, through an increase in the mathemagenic activities of the reader. Pre factual questions on the other hand tend to depress the learning of question irrelevant information because of the 'closed loop' or cybernetic effect on the reader. If the reader has learned a large amount of loosely organised question relevant and question irrelevant information at a 'one shot' study session, it would seem likely that both of these categories of information would be less stable on a long term retention basis than if only question relevant information had been learned.

If this reasoning is correct, it could be expected that the pre question groups in this experiment would significantly improve their position from the first to the third post test when their results were compared with those of the post question groups. An examination of Figure 8.0 clearly demonstrates this effect. Both pre question groups improved their relative positions markedly. The difference on the first post test between the factual question groups was a significant one in favour of the post factual treatment. On the third post test, however, this significant effect was lost and although the post factual treatment maintained its superiority it was very slight.

The reverse situation occurred, as could be expected, between the reasoning treatments. Whereas on the first post test the difference between these two treatments had been slight, but in favour of the pre question group, on the third post test the treatment effect was increased and almost reached the five per cent level of significance.

It could be expected that the length of the recall of the information would cause differences to occur between treatment effects. It would appear that for delayed tests of question relevant information the degree of specificity that can be brought to the reading task may influence the durability of the retention of the relevant information. The cybernetic effect then may favour long term recall in this situation.

When the three post test scores were totalled but not corrected for time, the effect of the post reasoning treatment

was significantly superior to that of the read carefully treatment. This would appear to give further support to the view that, with regard to the post reading position of adjunct questions, the type of question may not be a variable of great importance for the kinds of material read and the types of post test employed in this particular experiment.

When the totalled post test scores are corrected for time, however, a variable of considerable importance is brought in. The post factual treatment effect then becomes significantly superior to the post reasoning one, although at a borderline five per cent level. The extensive backward or review activity on the part of the reader to obtain answers to the post reasoning questions not only does not seem to add any more items to memory when compared with the post factual treatment, but it causes the reader to take a great deal more time to complete his task.

### 3. Question Type and Question Placement.

A significant and consistent interaction between the effects of question type and of question placement was shown on Figures 4.1, 4.2 (borderline), 4.3, 4.4 and 4.6. The facilitative effect of adjunct questions on learning from prose materials is not simply a matter of the placement or of the type of question. From the results obtained in these experiments it would appear that it is effected by the interaction between these two important variables.

On the first and third post tests the effect between these variables reached the five per cent level of confidence. On the second post test the effect was at a borderline level, but as could be expected when the results of the post test scores were totalled, the level of the interaction effect becomes highly significant.

On each of the post test measures the pre reasoning treatment effect was greater than the post reasoning effect, significantly so on the second post test and the two totalled post test results. On the third post test the effect was close to the five per cent level of significance.

With regard to the pre and post factual treatments the effects were in the opposite direction to the reasoning question treatments, although the differences between the two effects were not so marked. On each of the three post test measures, plus the two totalled scores, the post factual treatment effect was stronger than the pre factual. None of these differences, however, reached the five per cent level of significance.

Although previous researches have demonstrated the superiority of the post factual treatment over the pre factual, especially on post tests measuring the retention of question irrelevant information, none up to the time when the literature was reviewed had demonstrated the occurrence of the opposite effect from the placement of reasoning type questions. It would appear that Weintraub's (1969) criticism concerning the remarkable similarity of the findings of the researches in this

field of investigation may well have been justified. Both Pyper (1968) and Allen (1970) used factual and higher order adjunct questions in their studies, but they placed them only in the post reading position. They found no significant differences between the treatment effects. Their findings in that respect were similar to those of this investigation. It is when the higher order question, however, is moved to the pre reading position that its effect becomes significantly stronger.

#### 4. Student Reading Improvement and Their Reported Textbook Reading Habits, Attitudes and Problems.

##### a. Comparison between 'reading' and 'no reading' groups.

The analysis of variance on the reading achievement post test scores showed that there was a significant treatment effect in favour of the 'reading' groups over the 'no reading' at the five per cent level of confidence.

The two major variables which may have contributed to this significant effect have already been outlined in Chapter Four. Whereas the students in the 'reading' group had studied a course in reading, and during the course of their studies in this subject had made extensive use of adjunct questions ('directed reading'), those students in the 'no reading' group had made no such study, nor had they made extensive use of adjunct questions in doing their required course reading.

In order to obtain some information concerning the possible effects of the adjunct question ('directed reading') variable on

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student reading improvement it is necessary to refer to the relevant data obtained from the questionnaires which have been reported in Chapter Five of this thesis.

For example, on Table 15.0 of the College Reading Questionnaire, 61 per cent of 612 students selected 'directed reading' as one of the factors which had contributed to the reading improvement they felt that they had made during the year. Had this percentage been calculated only for the number of students who had had the opportunity to make regular use of 'directed reading', this percentage could have been considerably higher. On the same table it can be seen that 59 per cent of 290 students indicated that having to do more textbook reading contributed to their reading improvement. The effects of 'directed reading' on the amount of reading done by students will be referred to later in this discussion.

More specific information concerning 'directed reading' was obtained when 458 students were asked to indicate the ways in which this technique for guiding their required reading had helped to improve their reading ability. The following five factors from a list of twelve appear to be directly related to the particular purpose of contributing to a possible permanent improvement in their reading ability.

They reported that directed reading helped: to make their reading more purposeful (76 per cent); to make them more aware of the intense concentration required for study-type reading (52 per cent); reduce 'verbalism' (slipping over words

and ideas not understood) (48 per cent); to stimulate their thinking about what was being read (41 per cent), and to cause them to read their text more than they normally would (74 per cent).

A number of other factors in this list were related particularly to assisting them to carry out their assigned reading more effectively, without necessarily transferring to a possible permanent improvement in their reading ability. The same 458 students reported that directed reading helped them to: find key ideas and supporting details (86 per cent); increase their knowledge of the subject matter being studied (62 per cent); understand what was being read (60 per cent); prepare for tests and examinations (56 per cent); be motivated to read their text (45 per cent); stop their minds "wandering off" on to other things (21 per cent).

It could be accepted as almost axiomatic that any activity, be it physical or mental, which contains skills as important elements for the performance of that activity, will be improved by practice in those skills. The 59 per cent of the 290 students who indicated that having to do more reading contributed to their reading improvement seem to have recognised this principle. Similarly, the 74 per cent of 458 students who indicated that 'directed reading' had helped improve their reading by causing them to read their text more than they normally would have done appear to have acknowledged the importance of the same principle.



It would seem logical to assume then that those students who do more reading than their peers would tend to improve their control over the skill elements of the task. This improvement would seem to be even more likely to occur if their practice was 'directed' and made more purposeful, concentrated and thoughtful as suggested by various percentages of students on the table just referred to. If their practice also led to a reduction of inefficient reading habits ('verbalism', mind 'wandering off') and gave assistance in skill development (finding key ideas, aiding understanding, test and examination preparation), it would seem likely that the students who experienced more of this type of practice would make significant gains in their skills in reading compared with students who did not engage in this kind of 'directed' practice.

A comparison of the students' verbatim responses recorded in Appendix P concerning the action they usually took in response to being directed to read by page or chapter numbers with those made by students in reply to a question asking them what they 'thought of directed reading', gives a clear example of the effects on the reading habits of the 'directed' as against the 'non-directed' students.

With regard to the amount of required reading done, Tables 12.0 and 13.0 clearly show that the 'reading' groups reported doing considerably more of their required reading than the 'no reading' groups. Account, however, must be taken of the difference in the number of courses from which the students made their estimates. The 'reading' groups made theirs on

the basis of the reading they did for the Reading Syllabus Study course. The 'no reading' groups on the other hand made their estimates on the basis of all the reading they had been required to do for all their courses over a period of their college year.

The technique of 'directed reading' then appears to have exerted at least two major influences on the 'reading' group students. In the first instance it appears to have caused these students to engage in more textbook reading than they would normally have done. In the second instance their textbook reading was usually characterised by more purposeful activity which may have contributed to their increased reading skill.

The second major variable which may have contributed to the 'reading' groups significant improvement in reading was the possible effect of the increased knowledge and understanding of the process of reading, the range of skills and abilities involved in the process, and the methods of teaching these. Unfortunately no direct question was included in either questionnaire to obtain specific information concerning the contribution that this variable may have made to any reading improvement.

- b. Factors influencing students to read their textbooks and methods usually employed to direct them.

The results obtained from similar questions on both questionnaires, aimed at determining the methods used by college lecturers to direct their required course reading, clearly

indicate that by far the most common method is to give page or chapter numbers only. Tables 9.0 and 17.0 show that an average of 82.5 per cent of 405 students reported that this was the method usually employed.

When the results obtained from the question aimed at discovering the factors which caused students to engage in their required reading are examined, it can be seen that directing them to read by page or chapter numbers is one of the least influential methods. (Figures 6.0A and 6.1A). On the other hand, directions in the form of questions (Figures 6.0E and 6.1E) were, along with research-type reading for assignment purposes (Figures 6.0C and 6.1C) and being directed to read for tests and examinations (Figure 6.1B), the most influential methods reported by students as causing them to do their required reading.

Although the majority of students report that they were usually directed to required reading by page or chapter number, it should be noted that giving students well-designed assignments to do, which require research-type reading, is a legitimate and useful method of causing them to read their textbooks. Not only did the students not record this as a method used by lecturers to 'direct' them to reading but neither was it included in the structured list for the question related to this topic.

c. 'Directed reading' and course outlines.

The results of the questions related to determining students' attitudes and reactions towards 'directed reading' being an integral part of their course outline clearly indicate that the majority are in favour of the procedure. The specific, positive effects of the technique have already been referred to in a previous section.

The questions concerning the course outline (Tables 6.0 to 6.3) showed that the majority of students referred to it regularly and they felt that it made them study more effectively for the course (65 per cent), achieve better (45 per cent), and work harder than they usually did (43 per cent). 'Directed reading' received the highest percentage of choices (75 per cent) from the list of study aids included in the course outline and it would seem that students prefer to be directed by questions for which written answers are required (Table 7.2).

In order to discover the reasons for their generally favourable attitudes towards directed reading, it is necessary to go to the random selection of verbatim responses to the questions asking their opinion of the technique (Appendix Q). Comments such as the following give some indication as to why 69 per cent of students made favourable observations concerning directed reading: "Helps in that you have something concrete to do..."; "...establishes purposes and saves a lot of time. It is more effective for effective learning."; "...a good idea - you know what to do and how to do it."; "...encourages you to

read."; "...makes you do it because you have a real reason for doing it."; "...makes learning more purposeful and quicker."; "...makes you confident about what you are doing.". It would appear that knowing what they have to do and knowing why they have to do it are two important factors influencing student reactions and attitudes towards this procedure.

On the negative side two of the most serious reported problems associated with directing textbook reading by using adjunct questions were that it caused students to look too often only for answers and that, to a lesser extent, it made some students become antagonistic towards their textbook. Some of their abbreviated verbatim comments reported in Appendix Q illustrate these opinions. "...restricts what you are thinking about your reading. It tends to limit you to trying to find only the answers to the questions."; "...it is frustrating, monotonous, and not at all helpful in setting my own purposes for reading."; "...a hindrance in that one only looks for answers and misses out other points.".

These comments are a representative sample of why fourteen per cent of students were unfavourably disposed towards the technique of directed reading. Table 7.1 showed that 37 per cent of 449 students reported that 'directed reading' caused them 'always' simply to look for the answers to the questions and ignore the remainder of the chapter. Only one per cent of 157 students from the same population indicated that this is what they 'always' did when asked to do directed reading which

required written answers (Table 8.0). The higher percentage from Table 7.1 may have been caused by the question being one of a series of negatives, whereas the relative response on Table 8.0 was one of a series of positives. The fact that the former question was a three category ranking scale and the latter a four category scale could also have had a significant effect on their choices of categories. When the 'usually' and 'always' percentages are combined on Table 8.0, however, the total percentage still only reaches 21.

d. Reported reading difficulties.

One of the most important results relevant to this investigation obtained from the two questionnaires concerned one of the reported difficulties experienced by students in doing their required reading. From a list of thirteen factors seen as detracting from their ability to read effectively 69 per cent of 612 students indicated that they have difficulty in concentrating on what is being read and get to the bottom of the page and find their minds on other things.

Research reported on pages 80 and 81 of this thesis concerning the steady deterioration of students' attention to the task during an extended study-type reading period (Hoffman, 1946), and the absence of such symptoms on the part of students reading for an even longer period of time, but with inserted questions (Carmichael & Dearborn, 1947), seem particularly relevant here. One of the benefits of adjunct questions may be, as Rothkopf (1968) suggests, to simply keep the reader

going. That may be enough.

From the same table (16.0), 55 per cent of 612 students report 'regression' and 36 per cent see 'verbalism' as problems affecting their ability to read. These particular difficulties may well be closely related to the final factor on the list concerning their reported inadequacy of vocabulary (26 per cent). An analysis was made of 360 first year (1970) students' performance on the vocabulary section of the Co-operative Reading Test: Reading Comprehension, and this has been reported in Appendix U. Although a number of words in this test obviously suffer from an 'ageing' factor, that is, they are no longer words in common use today, the analysis provided a useful piece of objective information concerning the limited, meaning vocabulary of present-day students. The following is a brief sample taken from the 60 words listed. The number in the brackets refers to the number of students out of 360 who did not know the meaning of the word when required to select a synonym for the test word from five alternatives, only one of which could be correct. The number in front of each word indicates its relative position in the list of 60:

4. competition (21), 12. retard (25), 13. molest (45), 18. adept (106), 23. maze (158), 27. lethargy (156), 31. wield (238), 36. allege (247), 45. cleavage (208, N 357), 46. undue (231, N-355), 55. laconic (281, N-325).

Other factors such as 'sub-vocalisation' (24 per cent) and 'read too slowly' (30 per cent) may also be closely related

to the apparent limited meaning vocabularies possessed by too many first year students.

e. Student attitudes towards their reading improvement.

It can be seen from the discussion in the previous section that students report experiencing a wide range of reading difficulties. From the results of the pre and post tests on the Co-operative Reading Test (Figure 5.0), first year students, in general, improved their ability to read, as measured by this test. It should be noted here, however, that a 'practice effect' may have contributed to this general improvement.

One of the outcomes of studying reading as a subject may be that it leads to a greater awareness of one's deficiencies as a reader and the acceptance of the need to improve. The results of the questions seen on Tables 14.0 and 14.1 would seem to support this view. Whereas 55 per cent of 307 Reading Syllabus Study students indicate that they think they could improve their reading ability 'a lot', in answer to the same question 43 per cent of 611 students from the general first year student population thought similarly. Again, 41 per cent of 300 Reading Syllabus Study students gave a positive 'yes' when asked if they would attend a voluntary reading improvement course and 29 per cent of the first year student population gave this indication. It is interesting to note that an average of 10.5 per cent stated that they would not attend a voluntary reading improvement course if it were offered.



## B. Conclusions

### Introduction

The investigation reported in this thesis originated with the idea that by causing teachers' college students to read their textbooks interactively through using adjunct questions it may be possible to improve not only the quantity, quality and durability of their learning from printed materials, but at the same time promote a more rapid growth in their general reading ability. It was also thought to be necessary to survey student opinion about the advantages or limitations they saw in being directed to their reading in this way, and to obtain further information related to their required textbook reading and the range of problems which they may have met in doing this.

The conclusions drawn as a result of this investigation will be summarised under four main headings: the facilitative effects on learning and retention from textual materials of pre and post adjunct questions of a factual or reasoning kind; student reading improvement; reported student attitudes, opinions and problems associated with required reading tasks, and the final section will report conclusions concerning the relationship of these three main sections of this investigation. Unless otherwise stated, the conclusions related to the experiments involving adjunct questions have been made by comparing the adjunct question treatment effects with those of the 'read carefully' treatment.

1. The Facilitative Effects on Learning and Retention from Textual Materials of Pre or Post Adjunct Questions of a Factual or Reasoning Kind.

The conclusions relevant to this section will be reported under the following headings: general; post factual questions; pre factual questions; pre reasoning questions; post reasoning questions, and read carefully.

a. General.

- (i) For immediate recall purposes when measured by objective-type tests of question relevant information from extensive, course imbedded textual materials, pre or post adjunct questions of a factual or reasoning kind, do not have a significant facilitative effect.
- (ii) The facilitative effect of adjunct questions on learning and retention from textual materials is closely related to an interaction effect between the type of question asked and the placement of these questions in pre or post adjunct positions. In the experiment reported in this investigation the pre reasoning treatment effect was consistently superior to the post reasoning one and the post factual treatment was consistently superior to the pre factual.
- (iii) The specific and general facilitative effects on learning and retention from textual materials of

factual or reasoning questions in the post adjunct position were similar except when the effects of time taken for the reading task were considered.

b. Post factual questions.

Post factual questions had a specific and a general facilitative effect on learning and retention. This effect was strongest for facilitating the long term recall of key ideas and their explanations from textual materials. When the effects of time taken for the reading task are considered the significant facilitative effect of this treatment was lost. Post factual questions have a consistently stronger specific and general facilitative effect than pre factual questions, except for the long term recall of question relevant information. Post factual questions cause the reader to take a significantly longer time for a reading task than being directed to 'read carefully' or with pre factual questions.

c. Pre factual questions.

Pre factual questions had a specific and general facilitative effect on long term retention on learning from textual materials. For immediate recall purposes of question relevant information contained in lengthy, complex passages, however, the effect of this treatment was, in this investigation, to depress retention. When the effects of time taken for the reading task were considered the facilitative treatment effect

of pre factual questions was lost. Pre factual questions cause the reader to take significantly longer for a reading task than being directed to read carefully.

d. Post reasoning questions.

Post reasoning questions had a specific and general facilitative effect on the learning and long term retention of key ideas and their explanations, but did not significantly facilitate the learning and retention (short and/or long term) of question relevant information. Post reasoning questions cause the reader to take significantly longer for the reading task than any other treatment method used in this investigation. When the effects of time taken for the reading task were considered the facilitative effects of post reasoning questions were lost.

e. Pre reasoning questions.

In this investigation pre reasoning questions had the strongest specific and general facilitative effect of all treatments on learning and retention from textual materials, except for immediate recall purposes of the question relevant information. The pre reasoning treatment effect was most powerful for facilitating long term recall of key ideas and their explanations where it was significantly superior to all except the post factual treatment. When the effects of time taken for the reading task were considered the effect of the pre reasoning treatment was maintained. Pre reasoning

questions cause the reader to take a longer period of time for a reading task than being directed to 'read carefully' or by using pre or post factual questions.

f. Read carefully.

Directing students to read carefully, extensive, course imbedded textual materials, has a similar effect on short term retention to that of directing them to read with adjunct questions when an objective-type measure was used. When the corrected results of short and long term post test measures were combined and the effects of time for the reading task were considered, directing students to read carefully has a similar effect on learning and retention to directing them to read with pre or post factual or post reasoning questions.

2. Student Reading Improvement.

The results obtained from this investigation showed that studying a course in reading and making extensive use of adjunct questions during the course of these studies contributed significantly to the rate of reading improvement made by first year students attending the Christchurch Teachers' College.

3. Reported Student Attitudes, Opinions and Problems Associated with Required Reading Tasks.

The conclusions relevant to the survey section of this investigation will be reported under the following headings: directed reading; student reading difficulties; and required textbook reading.

a. 'Directed reading'.

It can be concluded as a result of the surveys conducted for this investigation related to the examining and assessing of students' reactions towards 'directed reading' that the majority of students involved in this survey reported:

- (i) that they favoured this as a method of guiding their required textbook reading;
- (ii) that this technique should be used more widely as an integral part of their course guides;
- (iii) that the use of directed reading contributed to their reading improvement;
- (iv) that it made their reading more efficient in a skill sense, more thoughtful and more purposeful;
- (v) that it caused them to read their textbooks more than they would usually.

b. Student reading difficulties.

It can be stated as a result of the questions related to reading difficulties experienced by first year teachers' college students:

- (i) that the most frequently reported difficulty was being unable to maintain concentration on the reading task;
- (ii) that the range of specific difficulties reported included such faulty reading habits as regressing, verbalizing, sub-vocalizing and reading too slowly;
- (iii) that an average of approximately one-third of them report

experiencing such skill difficulties as identifying main ideas and supporting details, understanding what is read and possessing inadequate reading vocabularies;

- (iv) that the majority are aware that they could improve their reading ability and 'would' or 'might' attend a voluntary reading improvement course if it were provided.

c. Required textbook reading.

It can be stated that as a result of surveying the problems students met in carrying out their assigned reading:

- (i) that the majority of teachers' college lecturers at the time of this investigation directed their students to required reading by giving page and chapter numbers;
- (ii) that this method of being directed was seen by students as one of the least influential ways of having them complete their task;
- (iii) that the lack of interest in their topic areas had a negative influence on causing students to complete their required reading.

4. The Relationship Between the Main Areas of the Investigation.

Conclusions concerning the relationship of the three main areas being examined in this investigation may now be drawn.

It can be stated:

- a. that adjunct questions of a factual and reasoning kind have a specific and general facilitative effect on learn-

ing and long term retention when reading textual materials and that pre reasoning questions have the strongest and most consistent effect;

- b. that when adjunct questions were provided in the form of 'directed reading' they were generally used by students in pre reading positions, that they favour their use and prefer to be required to write out the answers to the questions;
- c. that adjunct questions in the form of 'directed reading' were seen by students as facilitating their ability to do their required reading more effectively, and as contributing to their improved reading ability. The evidence of this subjectively reported effect may have been confirmed by the objective evidence obtained concerning the differences in the rate of reading improvement made by the 'reading' and 'no reading' groups of first year teachers' college students.

### C. Implications

It has frequently been said that good reading is an active process, the implication being usually that good readers actively seek meaning from the material they are reading. This investigator, however, prefers to think of good reading as an interactive process, a process whereby the reader not only seeks meaning from the printed page, but collects information, checks it against what he has already learned from other



sources, and in the light of this accepts, rejects, weighs and integrates the information, ideas and principles expressed by the author. As he proceeds, the interactive reader consciously, constructively and sometimes intuitively forms new meanings through the interaction between his ideas and those of the author. The outstanding characteristic of this kind of reading is the steady, vigorous and purposeful cognitive activity on the part of the reader.

This is the type of reading that this investigator believes students should be involved in when they open their textbooks for the purpose of completing a required reading task. One of the major purposes of this investigation was to discover if adjunct questions caused students to engage in this kind of reading, and through an almost 'forced engagement' if they not only learned more, but also 'learned how to learn' increasingly effectively by improving their reading skills and abilities.

The results of this investigation give a clear indication that adjunct questions, particularly pre reasoning ones, do have a significant facilitative effect on learning from prose materials, and that the majority of students not only prefer using them but that they also see their use as contributing specifically to their reading improvement.

One of the purposes of setting 'directed reading' was to enable students, as Rothkopf suggests, to 'enter the instructional situation' (1970, p. 326), since as he points out,

"you can lead a horse to water but the only water that gets into his stomach is what he drinks". (1970, p. 325)

A second purpose of 'directed reading' was to cause the students to engage in full and meaningful processing and so prevent them from engaging in reading characterised by an 'obedient purposelessness', so aptly described by Perry (1959). Bobrow and Bower (1969), for example, demonstrated that procedures which cause subjects to comprehend the meaning of sentences strongly facilitated learning. Frase (1969), when investigating the same field, showed that the nature of the processing that a person must give to a task influences what he will learn. An important aim of education, then, as Frase suggests

...is to remove the learner from direct stimulus control while maintaining appropriate problem solving behaviours. (1968, p. 330)

There is a strong movement in educational circles today for the teacher to be much more analytical in his approach to determining what he wants his students to learn. He is being asked to state the specific outcomes of his planned teaching/learning situations in behavioural terms. If this planned teaching/learning situation involves a student in the required study of a textbook, this does not absolve the teacher from the responsibility of determining the objectives he has for this learning experience. When the teacher has clearly established for himself the kinds of behavioural outcomes in terms of knowledge, understandings, skills and attitudes

expected from directing students to read certain sections of a textbook, it appears to be educationally unjustifiable not to inform them what these objectives are in quite specific, meaningful terms, so that they may more effectively and more efficiently set out to achieve these objectives.

In this investigator's opinion this 'knowing where you are going' principle is closely related in study-type reading to White's (1959) concept of 'competence motivation', and has a vital role to play in required reading tasks. In referring, for example, to the persistent behaviour of infants of grasping, handling, letting go of objects, White reminds us that this is not random behaviour which is provided simply by an overflow of energy.

It is directed, selected, and persistent, and it continues not because it serves primary drives, which indeed it cannot serve until it is almost perfect, but because it satisfies an intrinsic need to deal with the environment. (1959, p. 297)

This desire to achieve competence, to be able to deal effectively with a problem situation, and to know that you are doing so is a drive that should be actively encouraged and its development facilitated by those who come in contact with the learner. Frase sums up this point of view for the reading situation when he points out that

...learning from continuous discourse material (a high uncertainty condition) shifts the burden of control from the format of presentation to the orienting task. The orienting task, whether a question, a graph, or a combination of various aids, must ensure that students execute all the responses necessary for the successful performance

of the criterion task. (1968c, p. 201)

It would seem that well-placed, thoughtfully constructed and sequenced questions and directions inserted in prose materials provide the reader with the continuous opportunity to know his objectives and to know with some degree of certainty when he has achieved them.

On the other hand, if he has been given vague, ill-defined reading tasks through page or chapter number directions only, his criterion learning tasks are required to be self-determined from what may frequently be a base of meager experience in the subject field.

In Chapter Three of this thesis, detailed reference was made to four implications recorded by Smith (1967) as a result of her study concerned with setting purposes for reading. These need to be only briefly added to and modified to summarise the implications for this investigation. These findings have implication for teachers, textbook writers, curriculum makers and the students themselves.

1. Textbook writers should abandon their practice of placing questions at the end of their chapters and use adjunct questions and directions of various kinds taking care to place higher order questions in pre reading positions and lower order questions in post reading positions. The majority of textbooks today still have questions at the end of their chapters which, according to the research

evidence, is the worst place to put them to facilitate learning.

2. Teachers and curriculum-makers should examine their curricular to determine whether or not learning experiences to promote interactive reading are being provided for their students. There is evidence available to suggest that teachers are often the 'information processors' and that the demands placed on students to complete their required reading are minimal.
3. Teachers need to become proficient at developing well-planned study guides for required textbook reading incorporating the use of appropriate adjunct questions and directions, designed to allow the student to achieve at least the objectives previously determined for the reading by the teacher. There is evidence available that the most frequently used method of directing students to their required reading is by page or chapter number and that this is one of the least influential methods for ensuring that they carry out their task. A majority of students report experiencing difficulty in concentrating on their reading tasks and it is known that adjunct questions provide a stimulus to keep them going. Provision should be made, however, to provide other means of ensuring that students engage in interactive reading, since using adjunct questions for guiding reading does not suit all students.

4. Provision should be made for regular reading improvement courses to be available on a voluntary basis at teachers' colleges and universities. There is positive evidence that first year teachers' college students and some part-time university students know that they have specific reading difficulties, think that they could improve their reading abilities, and are desirous of doing so.

#### D. Limitations

There are a number of limitations to the various conclusions able to be drawn from this investigation. These will be reported under three main headings: adjunct questions, student reading improvement, and the survey section.

##### 1. Adjunct Questions.

Reference has already been made to the different procedures followed by the experimental groups with regard to being required to make overt responses or being permitted to make only covert responses. Although this was done in order to replicate the different procedures used by students in their normal use of adjunct questions and directions, the effect of these two variables may have been significantly different on the learning and retention achieved by the students when reading textual materials.

The research referred to in Chapter Three concerning the effects on learning of overt and covert responding indicates that when processing required of the learner is simple then it

does not seem to matter which form of responding is carried out. However, studies by Anderson (1967a, 1970) also already referred to in Chapter Three, and the previous discussion of the results, indicate that requiring the reader to engage in higher order processing and in the constructing of overt responses has a significant effect on the amount of material learned. It would appear that the pre factual and the read carefully groups may have been operating at a disadvantage with respect to their learning and remembering by not being required to construct overt responses as they read.

The length of the material to be read (7,700 words approximately) also introduced an unpredicted fatigue effect. For those students using pre and post reasoning questions the average duration of the reading task was 107 and 122 minutes respectively, compared with 81 minutes for the post factual group, 71 minutes for the pre factual group and 55 minutes for the read carefully group. Fatigue, then, may have had a depressing effect on the students' achievement on the immediate post test in particular.

The problems associated with the selection of the sample for the experiment involving the first year students, using five different methods of directing reading, was referred to in Chapter Four. The fact that those students using the reasoning questions and half of the read carefully group were not taking the Reading Syllabus Study at the time of the investigation introduced a sampling variable, the effects of which may have been threefold in depressing their post test achievement

scores, particularly with regard to an objective-type post test. Reference has already been made to the fact that the material to be read was not immediately course imbedded, and that the author's style was unfamiliar to these students. A third factor related to the style of objective-type test item writing may have also placed the Mathematics Syllabus Study students at a disadvantage on the first and third post test measures, since they were not familiar with this investigator's style of writing these items. Mager (1962) in his book Preparing Objectives for Programmed Instruction describes a study which showed that students who received instruction from a sequence of instructors and also received three tests from each instructor did poorly on every third test which was the first test of each instructor. This sampling problem could have been overcome had the students in the two Syllabus Study groups been assigned to the five experimental groups on a random basis across both of these Syllabus Studies, but College timetabling difficulties prevented this from occurring.

A further limitation was related to the form of the textual materials to be read and the associated adjunct questions. Only the post factual group had chapter booklets with the questions inserted throughout the material to be read. The remaining treatment groups used their textbooks or booklets containing only the chapter material and used cyclostyled sheets containing the relevant adjunct questions with a clear indication of when they were to be used. This variation in the presentation of the textual materials to be read, along with



their adjunct questions, introduced a number of variables related to the inspection activities of the readers over which there was little control. Time and money, however, prevented all experimental groups being given booklets with the questions and directions inserted in them.

Sufficient reference has already been made to the procedural irregularities associated with the second year pre and post factual groups and to the difficulties experienced in rigorously controlling the question-relevancy of the objective-type test items. The procedural difficulties were, unfortunately, unforeseen as this investigator thought that adequate briefing and timetabling arrangements had been made. Their effects, however, were obviously quite marked and almost certainly seriously affected the results obtained from the two groups involved. The post test, question-relevancy problem was within the control of this investigator but time available for rewriting the necessary test items and the length of the material to be read prevented more rigorous control here.

Despite the range of uncontrolled variables present in these experiments involving adjunct questions, the results obtained were generally in accord with those of previous studies, were in the hypothesized direction, or were usually able to be accounted for by reference to a specific study or particular problem associated with this research. This investigator feels reasonably certain that, had it been possible to have exerted more control over the predicted and unpredicted

variables present, similar results would have been obtained from the experiment, but that they would have been more clear cut.

## 2. Student Reading Improvement.

The problems associated with the lack of control able to be exerted over two main variables operating in this investigation have already been adequately referred to. Subjectively based, student opinion gave some indication of the possible contribution made to the significant gains in their reading ability of 'directed reading' (adjunct questions). Only irregular, personal communication with a number of students, however, has provided this investigator with the knowledge that the greater majority of them believe that their increased knowledge of reading per se has contributed to an improvement in their reading ability.

It cannot then be stated, as a result of this investigation, which of these variables made the contribution or the greater contribution to the significant improvement in reading ability made by the 'reading' students when compared with the gains made by the 'no reading' students.

## 3. The Survey Section.

The limitations to the results obtained from the two questionnaires lie mainly with the instruments themselves and the lack of the application to the results of any reasonably sophisticated statistical analysis in order to make specific

comparisons more objectively.

Some of the questions and their supplementary directions were rather long and complicated. The totally structured questions containing a checklist of various factors were generally too extensive, and the ranking questions frequently had rather lengthy questions or statements to rank. These unsatisfactory features of the survey instruments may have caused a number of students either to refrain from answering the question or to make their choices without a great deal of thought.

However, in spite of these important limitations, it was felt that the numbers of students involved in completing each questionnaire, and the relative consistency of the results obtained among the different groups of students completing both questionnaires over a period of two years, have allowed the results to be accepted with a reasonable degree of confidence.

#### E. Further Research

One of the interesting outcomes of a study conducted in an area of particular interest to an investigator is that in the course of the study and from the results obtained a number of additional problems and questions arise which require further investigation. The study conducted by this investigator and reported in this thesis is no exception to this situation. Some of the problems and questions raised have already been referred to in the discussion section of this chapter.

Others may now be outlined.

One of the problems in the field of educational measurement is the relatively poor predictive quality for future academic success of the available standardised tests frequently used for this purpose. Some interesting correlations are revealed from an examination of the correlations calculated between the achievement of first year teachers' college students in the English and Education courses and the predictor variables (AL, AQ and Reading Comprehension) and the experimental post test achievement scores (uncorrected) recorded in Appendix T. This table shows that the correlations between college achievement and the experimental post test achievement were generally higher than those drawn between college achievement and the AL, AQ, and Reading Comprehension standardised tests.

A more reliable predictive measure of academic success at teachers' college in at least two courses, then, may be obtained from having the students complete a reading task recording overt responses to suitably constructed and positioned adjunct questions, and subsequently to administer to them an immediate and/or delayed (unwarned) post test. These results could well be used for educational guidance purposes with more confidence than those obtained from the standardised tests used at present.

The investigation conducted to examine the interaction effects between question type and question placement also

requires further investigation. Studies are needed of various kinds of adjunct questions and directions to see if this interaction effect is maintained. The rate at which the different kinds of questions are inserted throughout the prose material in pre and post reading positions also needs further study. The kind of learning required and the duration of retention may be influenced by the frequency, type and placement of the adjunct questions.

A further important area relevant to question guided reading is White's (1959) concept of 'competence motivation', already referred to. Would, for example, the requiring of subjects to make overt responses to higher order adjunct questions, where they were provided immediately with the knowledge of the correct answer, contribute to the effects 'competence motivation' in reading? In this investigation, the fact that the students did not know whether the answers they constructed to the questions were right or wrong must have left them in a state of doubt, to some extent. This "uncertainty" condition may have at least two effects, both interrelated. It may interfere with the range or level of mathemagenic activity on the part of the learner and it may also interfere with the confidence with which the learner is able to memorize information.

The effects of time taken for reading have seldom been taken account of in studies investigating the facilitative effects of adjunct questions on learning from prose materials. In this investigation this variable clearly had a significant

effect and it would seem that, unless time is not an important factor in study (and this seems unlikely), the only kinds of questions which should be used to facilitate the type of learning and retention being measured here are pre reasoning ones. If the aim, however, is to facilitate learning in independent study, the important function of adjunct questions may be also, as Rothkopf suggests, to have the students 'enter the instructional situation', that is, open their book and start reading. Another important function of adjunct questions may be also to keep them at their tasks. Clearly, further study is needed of the effects of time taken on 'directed' and 'undirected' reading, coupled with a study of whether students are more likely to 'enter' and 'keep going' at their reading tasks through the assistance of adjunct questions, and whether they need to make overt or only covert responses in the process of answering the questions.

With regard to the reading improvement section of this investigation, further studies are required in order to try to establish the specific effects of the two major variables which appeared to operate to improve significantly the 'reading' group's reading ability. A specific suggestion will be made concerning this area of needed investigation in the concluding remarks to this chapter.

Apart from the direction given for further studies to demonstrate whether or not 'directed reading' contributes to reading improvement or not, the survey section of this investiga-

tion provided a wide basis for further research. These may be only summarised here.

A careful examination needs to be made of tertiary level students' specific reading disabilities in order that efforts may be made to reduce their effects and eventually to eliminate their causes. Why do tertiary level students report that they sub-vocalize, verbalize and regress frequently during their reading? Why do they have difficulty in maintaining concentration during their reading? What causes these symptoms of poor reading to develop? Improved reading programmes at the primary and secondary school level may be the outcome of 'retrospective' investigations of tertiary level students' reading disabilities.

The provision of different kinds of course outlines for different kinds of students also would appear to warrant closer study. It may be that highly anxious, heavily dependent students require a carefully structured guide for their study to enable them to achieve at their capacity level. Maybe the confident, independent student requires a much less structured course guide with few directions for reading.

In the same area of directing students to required reading, further study is needed of the effects of giving them vague or hortatory directions to do certain reading and then the teacher doing little or nothing about ensuring that the reading has been done, other than by requiring them to sit a distant, terminal examination. How much of the traditional

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last minute 'cramming' that goes on near these examination times is the result of inadequate directions given for required reading throughout the academic year? Is this related to the report of students in this investigation that one of their most common problems in completing assigned reading was maintaining their attention on the printed page?

These, then, are some of the more important problems and questions which have been raised by this investigation.

### Summary

Criticisms have been made of studies involving the use of adjunct questions in prose materials. Weintraub (1969), for example, saw the continued use of questions of a factual kind as a serious limitation to the application of the results obtained from these studies because of the narrowly conceived concept of reading that this kind of direction implies. The need for investigations to use lengthy, course imbedded materials and for the subjects to be permitted to 'backtrack' while answering the questions were seen by Pyper (1968) as necessary if the results of the studies were to be widely generalizable to classroom practice.

Natkin and Stahler (1969) saw the need for these kinds of experiments to use long, as well as short term measures of retention, since the effects of adjunct questions may well be different for different periods of recall. Further, the need to take some account of the additional time spent by



question-guided subjects in constructing and recording their answers was seen by Peeck (1970) as a limitation to results obtained from previous studies. The additional time spent on this process may have been more profitably used in re-reading and/or overlearning activities.

This investigation has gone at least some of the way towards overcoming limitations of previous studies conducted in the field.

It has not gone far enough, however, in making the research fully course imbedded. This investigator agrees with Rothkopf that a study is needed to see if two courses which differ only in the character of their adjunct questions produce different end results in learning and retention. (1970, p. 128). This study needs to be conducted over an extended period of time and needs to include a third parallel course where the subjects receive directions only to read carefully. Provided the necessary pre-testing was carried out, it should be possible to discover if any of the treatment effects not only facilitate learning and retention relevant to the course, but also contribute to the improvement of the reading ability of those students involved in the course.

Like the materials used in this investigation, reading improvement courses need to be course imbedded. The best teachers to teach students how to read more effectively are their course instructors, those who are responsible for facilitating the students' learning. An investigation of the

kind recommended may demonstrate that this is possible.

The need for such an investigation is clear, for as Gagné suggests,

...the book can impart a great deal of instruction in a relatively short time when used by a suitably prepared student who can read. The potentialities of printed texts for instruction are very high, and it is doubtful that they have been well exploited as yet. (1965, p. 277)

If the potentialities of printed texts are to be fully exploited, the responsibility for 'suitably' preparing students to engage in interactive reading and to ensure that they do so lies with the teacher who uses books for instructional purposes. One way of achieving this would appear to be through providing the student with carefully designed reading guides incorporating the use of critically placed and thoughtfully constructed adjunct questions.

## BIBLIOGRAPHY

- Allen, D. Ian, (1970), Some effects of advance organisers and level of question on the learning and retention of written social studies material, Journal of Educational Psychology, Vol. 61, No. 5, 1970, pp. 333 - 339.
- Anderson, R. C. (1967a), Educational psychology, Annual Review of Psychology 18, 1967(a), pp. 129 - 164.
- (1970), Control of student mediating processes during verbal learning and instruction, Review of Educational Research, Vol. 40, No. 3, 1970, pp. 349 - 369.
- Bobrow, S. A. and Bower, G. H. (1969), Comprehension and recall of sentences, Journal of Experimental Psychology, 1969, Vol. 80, pp. 455 - 461.
- Bruning, R. H. (1968), Effects of review and testlike events within the learning of prose materials, Journal of Educational Psychology, Vol. 59, No. 1, 1968, pp. 16 - 19.
- Carmichael, L. and Dearborn, W. F. (1947), Reading and Visual Fatigue, Boston, Houghton Mifflin, 1947.
- Frase, L. T. (1967), Learning from prose material: length of passage, knowledge of results, and position of questions, Journal of Educational Psychology, Vol. 58, No. 5, 1967, pp. 266 - 272.
- (1968a), Questions as aids to reading: some research and theory, American Educational Research Journal, Vol. 5, No. 3, 1968, pp. 319 - 332.
- (1968c), Some unpredicted effects of different questions upon learning from connected discourse, Journal of Educational Psychology, Vol. 59, No. 3, 1968, pp. 197 - 201.

- (1969b), A structural analysis of the knowledge that results from thinking about text, Journal of Educational Psychology Monograph, Vol. 60, No. 6, Pt 2, 1969, pp. 1 - 16.

Frase, L. T., Patrick, E. and Schumer, H. (1970), Effect of question position and frequency upon learning from text under different levels of incentive, Journal of Educational Psychology, Vol. 61, No. 1, 1970, pp. 52 - 56.

Gagné, R. M. (1965), The Conditions of Learning, New York, Holt, Rinehart and Winston, Inc., 1965.

Hoffman, A. C. (1946), Eye-movements during prolonged reading, Journal of Experimental Psychology, Vol. 36, 1946, pp. 95 - 118.

Mager, R. F. (1962), Preparing Objectives for Programmed Instruction, San Francisco, Fearon Publishers, 1962.

Natkin, G. and Stahler, Elizabeth (1969), The effects of adjunct questions on short and long-term recall of prose materials, American Educational Research Journal, Vol. 6, No. 3, 1969, pp. 425 - 432.

Peeck, J. (1970), Effect of prequestions on delayed retention of prose material, Journal of Educational Psychology, Vol. 61, No. 3, 1970, pp. 241 - 246.

Perry, W. G. Jnr. (1959), Students' use and misuse of reading skills: a report to the faculty, Harvard Educational Review, Vol. 29, No. 3, 1959, pp. 193 - 200.

Pyper, J. R. (1968), Attentional factors in learning from written texts, Journal of Developmental Reading, Vol. 14, No. 1, 1970.

- (1968), A review of the effects on learning of questions inserted in textual information, a paper presented at The Annual Convention of the National Society for Programmed Instruction, San Antonio, Texas, April 1968.

Rothkopf, E. Z. (1968), Two scientific approaches to the management of learning, in Gagné, R. and Gephart, W. J. (Eds), Learning Research and School Subjects, Itasca, F. E. Peacock, 1968.

- (1970), The concept of mathemagenic activities, Review of Educational Research, Vol. 40, No. 3, 1970, pp. 325 - 336.

Rothkopf, E. Z. and Bisbicos, Ethel E. (1967), Selective facilitative effects of interspersed questions on learning from written materials, Journal of Educational Psychology, Vol. 58, No. 1, 1967, pp. 56 - 61.

Smith, Helen K. (1967), The response of good and poor readers when asked to read for different purposes, Reading Research Quarterly, Vol. 3, No. 1, 1967, pp. 53 - 83.

Weintraub, S., The question as an aid in reading, The Reading Teacher, Vol. 22, No. 8, 1969, pp. 752 - 755.

APPENDICES

## APPENDIX A

THE INSTRUCTIONS AND INTRODUCTORY COMMENTS FOR THE  
RESEARCH ASSISTANTS AND THE EXPERIMENTAL GROUPS  
USING PRE OR POST FACTUAL QUESTIONS AND THE GROUPS  
DIRECTED TO READ CAREFULLY.

Instructions and Introductory Comments for the  
"Reading Syllabus Study" Experimental and Control  
Groups

I. General instructions and comments for all groups.

Make sure the subjects are widely distributed over the room and then say:

"This morning you are all taking part in an investigation, the results of which could be of benefit to students at all levels of education. The usefulness of the results of course will be influenced by the manner in which you approach the task and we are grateful for the cooperation you have shown in this matter. Fortunately the material that you are going to use is part of the content of this course in the teaching of reading. Normally you would have had to read it in your own time. You will find also that much of what you are going to read this morning will be of direct and immediate use to you for your practical assignment to be carried out in schools."

Supervisor: Please go to the specific instructions for your particular group.

II. Specific instructions and comments for each group.

A. Post-Reading, Factual Questions (Overt Response)

1. Issue the booklet "Developing Comprehension and Critical Reading Skills" with the inserted questions. Point out that they do not have to read the section on p.5 "Comprehension as a Decoding Process."
2. Check the clarity of inserted questions on pages: 4, 7, 8, 9, 10, 17, 18, 19, 20, 23.
3. Say: "Place your name and group on the top right hand corner of page one".



II. A. (cont'd)

4. Say: "This morning you are being asked to read this material following the instructions placed at the beginning of the chapter".
5. Read these instructions to them.  
(See Appendix A )
6. Instruct the subjects to cover the questions with a piece of note paper until they have finished reading the relevant section. Demonstrate this procedure.

(NOTE: THE FOLLOWING INSTRUCTIONS ARE TO BE READ TO ALL GROUPS AND WILL NOT BE REPEATED IN THESE APPENDICES.)

7. Say: "As soon as you complete your reading and study of this chapter you are to indicate to me that you have finished by raising your hand. I will then give you a multiple choice, objective-type test to complete, based on the material you have just read. You are to read the directions for this carefully and then complete the test. You may leave the room when you have completed both tasks.

Remember that the material you are about to read is important for you as a teacher, and that the results obtained from this investigation will be influenced by the manner in which you approach the task".

(EACH SUPERVISOR CONTINUES WITH THE SPECIFIC INSTRUCTIONS FOR HIS GROUP.)

8. Say: "Please read the material in each section BEFORE you read the relevant question. Thank you for the cooperation which you have shown in the matter. Are there any questions? Check that your name is on the top right hand corner of your booklet. You may begin reading now."

## A. (cont'd)

9. The supervisor is to note the starting time and record this on each subject's post test answer sheet. The time that each subject requests the post test is to be recorded below the starting time already recorded on the respective answer sheets.
10. Collect each subject's Chapter 14 booklet before the post test is commenced.

## B. Pre-Reading, Factual Questions and Directions Group, (Overt Response Optional).

1. Issue the Chapter 14 booklets, the "Preview Questions: Developing Comprehension and Critical Reading" cyclostyled sheet, and note paper to each subject. Point out that they do not have to read pp.458-9, "Comprehension as a Decoding Process".
2. Say: "Place your name and group on your cyclostyled sheet of questions and directions".
3. Say: "This morning you are being asked to read this chapter following the instructions recorded at the top of your cyclostyled sheet of preview questions and directions".
4. Read these instructions to them.
5. Say: "You may take notes as you read and you should record these on the note paper issued or on the question sheet. Please do not mark your booklets."
6. Say: "All this material will be collected before you commence the post-test."
7. (As for "Specific instruction 7" Post-Reading, Factual Questions Group.)
8. Say: "Please read the question BEFORE you read the relevant section.  
Thank you for the cooperation which you have shown in this matter."

## B. 8. (cont'd)

Are there any questions?  
Check that your name is on your cyclostyled sheet. "You may begin reading the first direction now."

9. (As for Specific instruction 9, Post-Reading, Factual Question Group.)
10. Collect the Chapter 14 booklets, cyclostyled sheet of questions and directions, and any notes taken, before the post test is commenced.

## C. No Question Group: ('Read Carefully').

1. Issue the Chapter 14 booklet and note paper. Point out that they do not have to read pp.458-9, "Comprehension as a Decoding Process".
2. Say: "Place your name on any note paper which you use."
3. Say: "This morning you are being asked to read Chapter 14 of Spache and Spache, "Developing Comprehension and Critical Reading Skills". You are to read it slowly and carefully. You may take notes as you read but these will have to be collected before you commence the post-test. Please do not mark your booklets."
4. (As for "Specific instruction 7", Post-Reading, Factual Question Group.)
5. Say: "Please read the material slowly and carefully. Thank you for the cooperation which you have shown in this matter. Are there any questions?  
Remember that you are to enter your name on any sheets of paper on which you record notes.  
You may begin your reading now."
6. (As for "Specific instruction 9", Post-Reading, Factual Question Group.)
7. Collect the Chapter 14 booklet, and any notes taken before the post test is commenced.

## APPENDIX B

THE TEXTUAL MATERIALS USED BY ALL GROUPS IN THE  
INVESTIGATION WITH THE POST FACTUAL QUESTIONS  
INSERTED IN THEIR ADJUNCT POSITIONS.

Name: \_\_\_\_\_

Group: \_\_\_\_\_

## DEVELOPING COMPREHENSION AND CRITICAL READING SKILLS

Instructions concerning the use of the post-reading exercises.

As you read this chapter you should attempt to complete the exercises that have been inserted in the text, as you come to them. You should try to complete each task without looking back over the material you have just read. If you find it necessary to refer back to the material you are at liberty to do so.

### PREVIEW

The term comprehension is one that is used glibly by many teachers and reading experts. Yet the meaning given the word differs great from one user to the next. Despite the research analyses of the process, comprehension is often hypothesized as a long list of subskills. The logical assumption is then made that each of these skills must be practiced separately - that eventually all the skills will function simultaneously while the individual is reading. Some teachers stress a certain few of these subskills; other teachers emphasize others. Both are quite sure, however, that they are promoting the development of comprehension.

Recent studies by tests and interviews are beginning to raise questions about this multiplicity of comprehension subskills. It appears that what the reader retains while reading reflects such influences as: (1) his purpose in reading or what he intends to retain; (2) the instructions he is given before reading, which may lead him to find only the precise answers to specific questions or to secure a broader

comprehension if the questions are more general. Comprehension is affected even more, however, by the pattern of questions the child learns to anticipate, he learns to read with only those types of thinking that the teacher's questions demand. Since teachers' questions appear to be limited in type and depth, children's thinking (or comprehension) tends to be superficial and stereotyped, and lack critical thinking.

Interviews of students with good and poor comprehension reveal one other significant element. This is the degree of involvement of the reader, his interaction with the author's ideas, the depth and variety of his associations he reacts with to the material. Active reacting to reading is, again, a habit promoted by classroom practices which foster stimulating, interesting follow-up to the child's reading. Thus, again, it seems that the comprehension achieved by pupils is largely determined by what associations the teacher stimulates.

List the important factors that appear to influence what a reader retains while reading.

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Despite the wealth of materials suggesting ways of developing comprehension and critical reading skills, it is quite clear that we still lack basic definitions of these terms and clear differentiation between them. Some authorities give long lists of comprehension skills and other lists of critical reading skills with considerable overlap. Others define these reading behaviours as an encoding process, a thinking process, a cognitive procedure, or a process operating simultaneously at four levels - word perception, comprehension, reaction and evalu-

ation, and assimilation of the new ideas and previous information.

For the sake of simplicity, we will consider separately these two aspects of understanding and reacting to what is read. But, as we shall point out, we consider critical reading a type or degree of comprehension - a type of reading behaviour that appears as a natural application of comprehension, if the reader is so trained.

How does the author see the relationship between comprehension and critical reading?

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### Comprehension as Skill Development

As part of an attempt to provide better reading instruction for migratory children, Roy McCanne of the Colorado State Department of Instruction has listed comprehension skills. Since his list is fairly typical, we reproduce it here.

In the second column, for contrast, a list of critical reading skills identified in ten basal reading programs by Gertrude Williams is given. Parallel items in these two lists are starred.

Comprehension Skills (After McCanne)	Critical Reading Skills (After Williams (22))
Following instructions	+Anticipating outcomes
+Classifying things and ideas	+Appreciating humor, plot
+Understanding sequence	+Classifying ideas
+Comparing and contrasting	+Comparing and contrasting
+Visualizing characters, settings, events	Critical thinking
Discriminating phrases, sentences, paragraphs	+Distinguishing fact and fancy
Selecting the right meaning of words	+Distinguishing fact and opinion
	+Drawing conclusions
	+Establishing cause and effect

Understanding adverb and pronoun references	+Establishing sequence
Using punctuation as an aid to meaning	Evaluating author's attitude
Suggesting title of story	+Evaluating and react- ing to ideas in the light of the author's purpose
Finding main idea of story	Evaluating and solving problems
Finding part of story for specific purpose	Evaluating summaries
Making and using questions	+Finding information to prove or disprove a statement
Distinguishing narra- tive from conversation	Forming an opinion
Identifying declarative and interrogative sentences	+Forming sensory impress- ions
Finding major thought units	+Generalizing
Finding details to support main ideas	Identifying elements of style
Recalling information for objectives	+Identifying and evaluat- ing character traits
Recognizing relevant and irrelevant parts	+Interpreting figurative and idiomatic language
+Generalizing on given information	+Interpreting ideas, implied, not stated
Identifying time and place	+Judging author's state- ments
+Discerning literal vs. figurative	+Judging reasonableness and accuracy
Finding main idea of a paragraph	+Making inference
Deciding on sub-titles	+Making judgments
Understanding maps	+Perceiving relationships
Understanding diagrams	+Predicting outcomes
Understanding graphs	+Reacting to mood or tone
Understanding schedules	+Recognizing emotional reactions and motives
+Making inferences	+Recognizing story prob- lems and plot structure
+Predicting outcomes	+Relating story experiences to personal experiences
+Drawing conclusions from ideas	+Research
Using imagination	
+Relating cause and effect	
Relating general and specific	



- +Classifying things
- +Recognizing parts and whole
  - Recognizing relative sizes
- +Sensing relationship between people
- +Recognizing story plots
- +Analyzing character
- +Identifying with story characters
- +Recognizing emotional reactions
- +Recognizing motives
- +Reacting to mood
- +Relating story to personal experience
- +Distinguishing fact from opinion
- +Weighing facts and opinions
  - Deferring judgment on inadequate evidence
- +Basing judgment on evidence
- +Obtaining ideas from many sources
  - Perceiving analogous situations and ideas
- +Evaluating content in terms of author's purpose
  - Relating past and present
- +Judging validity by author and recency
  - Recognizing backgrounds for points of view

There is not only considerable overlap between these so-called comprehension and critical reading skills, but even duplication within each list. Besides, both lists probably include items that almost any reader would demand must be defined more clearly.

What we have tried to illustrate is the great difficulty any reading expert experiences in trying to name the specific reading skills that constitute comprehension or critical reading. First, because of the problem of semantics, authors of any two lists would probably disagree. What one calls "establishing cause and effect" the other calls "recognizing cause and effect" or "perceiving relationships", etc. until the teacher of reading becomes thoroughly confused.

A second obstacle to this naming process is the research evidence that few, if any, of the skills named can be shown to exist by careful analysis of test questions. If a number of reading tests purporting to measure any number of specific comprehension or critical reading skills are analyzed to find common components, all these terms such as we have listed above fail to appear. This type of analysis, called factor analysis, has been done a number of times in the last decade. All such studies find only three components of the reading act: a "word" factor reflecting comprehension of word meanings; a relationships factor--among the ideas of the text; and third, a reasoning factor. The immediate and obvious implication of this research, as exemplified in the study by Socher (16) is that comprehension may not be composed of fifty or more supposedly discrete skills, but may be a much more general process. All the separate skills identified by various authors or test makers may simply be labels given by them to the kinds of questions they ask, rather than distinct, trainable reading behaviours. If these facts are true, and there is little reason to doubt them, we are offering a very disturbing concept for the teacher who has been led to believe that comprehension is developed by the sequential practice of a certain number of discrete skills which later automatically blend into the total act of comprehension.

What factors operate against the identifying and naming of long lists of comprehension and critical reading skills?

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List the three components of the reading act that have been identified.

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### Comprehension as a Decoding Process

Recently, reading teachers have been urged to conceive of comprehension as a decoding process - a translation of graphemes into phonemes - a recognition that "reading is talk written down." Reading is apparently synonymous with spoken language or simply a matter of (a) making discriminative responses to graphic symbols and (b) decoding graphic symbols into speech. Encoding or obtaining meaning, receiving communication from the printed page, and integrating former experience with the concepts offered in a printed form, are generally ignored in this linguistic type of definition.

We have dealt with this over-simplified concept of the reading process at length in an earlier chapter. We have questioned whether a grapheme-by-grapheme decoding ever really occurs; have pointed out the

significant differences between spoken and written language; have shown that the control of vocabulary by its spelling patterns is irrelevant to the question of word meaning or word difficulty; and have demonstrated that linguistic analysis of the frequency of letter combinations has almost nothing to do with a sequential presentation of beginning vocabulary. The interested reader may refer to these rebuttals in

the chapter on the linguistic approach, or again, in the later discussion of new, innovative programs which employ these concepts.

### Comprehension as a Thinking Process

If we conceive of comprehension as a thinking process, there are two immediate and striking implications for instructional procedures. These are the nature of the operations in thinking and the possible ways of stimulating these cognitive processes. Guilford (3) has offered his well-known model of the structure of the intellect, in his fashion:

Operations	Products
Cognition-recognition of information	Unit-the word
Memory-retention of information	Class-the sentence
Divergent Production-logical, creative ideas	Relations-literal main ideas of a paragraph
Convergent Production-conclusions, inductive thinking	Systems-paragraph organization and structure
Evaluation-critical thinking	Transformations-analyzing and manipulating paragraph content
	Implications-recognizing selecting, implementing implied ideas

In an earlier book, Spache (17) has shown how this model of reading as a thinking process could be translated into specific reading behaviours. For example, at the unit level, these processes might result in these behaviours:

Cognition-the recognition that the word has meaning; is a symbol for an object or event.  
 Memory-the recall of specific word meanings.  
 Divergent Production-obtaining the meaning of a word from context by inference.  
 Convergent Production-obtaining the meaning of a word from the structure of the context, as by an appositive clause.

Evaluation-acceptance or rejection of the author's use of this particular word to convey a certain meaning.

Donald L. Cleland (1) has another interesting analysis of the thinking processes inherent in the comprehension act. He believes the reader uses:

Perception-a meaningful response to the graphic symbols we call words, sentences, paragraphs, etc.

Apperception-relation new material to one's background of experience; matching the reader's experiences to those offered by the writer.

Abstraction-selecting, choosing and rejecting perceptions, concepts, images

Appraisal-estimating the validity of these poor processes

Ideation-inductive reasoning or generalizing opinions, conclusions, or judgments  
deductive reasoning or examining the facts in the light of a known principle or fact

Critical reasoning-interaction between the reader and the writer involving evaluation by the reader

Problem solving-(a) becoming aware of a problem; (b) orienting to the problem; (c) forming a tentative solution; (d) evaluating or testing the solution; (e) testing the final solution by use or application

Creative thinking-the making of new syntheses or seeing new relationships

Application-the uses that a reader makes of the ideas acquired by reading

One other model of comprehension offered by William S. Gray and modified by Helen M. Robinson (12) might be described. The five major aspects of reading may be distinguished in this manner.

Word Perception-at the center or beginning of the process and involving recognition as well as pronunciation and meaning

Comprehension-a "clear grasp of what is read" at the levels of literal meanings, implied meanings and possible applications beyond the author's meanings

Reaction-standards of judgment, reading conclusions, and emotional responses as well as an inquiring attitude

Assimilation-using critical judgment, creative thinking and combining one's own experience with the information offered by the author

Speed of Reading-demanding flexibility and adjustment to the reader's purpose and the nature and difficulty of the material

The similarities among these various models of comprehension are apparent. Fundamentally, all emphasize the word or word meaning factor, the relationships among ideas factor, and the reasoning factor identified by the factor analysis and Guilford studies. All these models depict comprehension as a group of processes working more or less simultaneously in the act of reading. Some skills are referred to, of course, but it is apparent that none of these model creators conceive of the process as one of separate or discrete skills. Rather the implication is that skills form part of the components of the various operations, and the operations themselves combine into larger, more complex processes.

What do all the models of comprehension have in common?

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#### Comprehension as Defined by Tests

In the average American school, the most frequent measure of the success of the entire reading program is the annual or semiannual reading test. Administrators as well as classroom teachers seem to accept these instruments as meaningful evaluations of the outcomes of their instructional efforts. If, in so-called reading comprehension tests, their pupils test is at or above grade, everyone assumes that the pupils

are developing facility in this area. It is assumed that such results prove the validity and effectiveness of the usual skills-drill procedure.

But what do reading comprehension tests really measure beyond the ability to obtain literal meanings from printed materials\* Do any reading tests actually sample such processes mentioned above as assimilation, convergent reasoning, evaluation, abstraction, appraisal or application, to cite only a few of the higher level elements? In fact, do such reading tests measure any of the significant long-range goals of the reading program such as creating and stimulating reading interests, achieving breadth and depth of reading experience, enjoying and using reading for personal growth? In his contrast of British and American uses of reading tests, Morris (10) makes the strong criticism that American schools, by depending so naively on test scores, actually fail to measure their own progress in achieving any of the really significant aims of reading instruction.

If we can judge from Traxler's study (19) even the test construction experts are confused as to the nature of comprehension and the ways of measuring its development. In a group of reading comprehension tests that Traxler surveyed, there was at least one skill measured in each test that no other of the twenty-five tests measured. Apparently almost every reading test constructor has unique ideas regarding the components of comprehension.

Other studies indicate, as we have cited (16) that all the skills and subskills tested boil down to only three major processes--word meanings, relationships among ideas, and reasoning processes. Still other studies show that many test questions depend entirely on the informational background of the reader rather than the thinking required by the selection. And, questions frequently can be answered by the information actually given in surrounding items of the test itself.

Finally, Dorothy Lampard's study (8) found that independent of intelligence and maturation, reading tests of comprehension have little relationship to such applications as outlining, summarizing, or

problem-solving of reading materials. Comprehension ability as measured by tests was not highly related to the ability to reorganize or synthesize ideas just read, in this study.

We might sum up this discussion of the definition of comprehension by tests as almost a meaningless effort. Reading tests tend to claim to measure skills which experts cannot show to exist. Test scores bear little or no relationship to most of the major components of comprehension, if indeed they actually measure anything more than sophistication in taking tests and the reader's informational background. Reading tests fail to assess the abilities to organize, synthesize, or apply the facts read, or, in other words, any of the really useful aspects or long-range values of reading ability. Certainly reading tests do not help us understand or even define the process of comprehension.

What are some of the dangers inherent in attempting to establish a pupil's comprehension ability by administering a typical standardised test of reading comprehension?

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What skills and abilities should tests of reading comprehension attempt to measure?

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### Defining Critical Reading

As we have seen, the reading behaviours often thought of as critical reading, are included in the broad definitions of comprehension, as in the models of Guilford, Cleland, and Robinson discussed earlier.



If we summarize their thinking, they and other authors seem to include these elements in their description of critical reading:

1. An inquiring attitude toward the material and its author.
2. Sufficient informational background to supply standards for critical evaluation.
3. Skill in suspending judgment and the influence of one's own feelings until the selection is thoroughly understood.
4. Ability to analyze the logic of the material to differentiate fact and opinion and detect omissions and distortions.
5. Evaluation of the author's background and intentions, his beliefs and implications.

For the purposes of this discussion, we would identify critical reading as a type or degree of comprehension which involves the exercise of critical judgment of the nature and value of what is read based upon criteria or knowledge derived from the personal experience of the reader. Although closely related to other components of comprehension, critical reading does not necessarily appear as a result of good comprehension ability. Nor is it closely related to intelligence or maturity, for even young children can exhibit critical thinking. Therefore, critical reading must be taught continuously to all pupils with even a modicum of reading ability.

What are the important elements that could be considered to constitute critical reading?

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## Factors Influencing Comprehension and Critical Reading

Before approaching the question of how we might teach comprehension, it would be wise to consider some of the factors that influence or effect successful comprehension. With this background information, the teacher may then attempt to modify his teaching of comprehension in terms of pupil differences, variations in materials, and the purposes for reading.

The factors influencing comprehension may, for convenience, be arranged in three categories: those inherent in the material being read, the characteristics of the reader himself, and the influences dependent upon the manner of reading. These categories overlap, of course, but they permit a more organized review of the extensive literature.

### The Material Being Read

A primary influence upon the reader's comprehension is his ability to deal with the vocabulary - the word factor so frequently mentioned in factor analyses of the process. In a sense, the reader's success in recognizing the technical terms and the denotations and connotations of the words the author chooses depends upon his reading and informational backgrounds. But his comprehension also depends upon his skill in word analysis by structural, contextual and visual clues. Thus, although the vocabulary difficulty is an inherent characteristic of the material, like most reading behaviours, solution of the problem rests upon the reader's abilities. An obvious implication of this factor is, of course, that pupils cannot be expected to show successful comprehension in materials with very unfamiliar vocabulary, presenting concepts beyond their experiential background. Nor can they deal readily with reading materials when they lack word analysis skills.

The difficulty of structure, style, or concept density are other characteristics of the material being read which may affect its comprehension. The presence of visual aids, which for some become visual handicaps, such as maps, graphs, and tables also affect comprehension. Ruddell (13) has shown that, as we might

expect, pupils can read more effectively in materials in which the sentence structure resembles that which they customarily use in oral language, than when patterns are unfamiliar to them. Wilcox (21) found that adult students comprehended best a text accompanied by a graph, more poorly a text with a table, and poorest when reading the text alone. A number of other studies show that many students never develop any great facility with these textual aids, and they prefer to skip them entirely rather than comprehend less by using the graphic aids.

The name or prestige of the author also tends to influence the reader's comprehension or, in other words, his acceptance of the ideas offered. When known or familiar authors are attributed to comparable selections, even college students tend to understand and accept better those selections supposedly by famous authors. Elementary children are, of course, even more susceptible to this prestige element. The implications present in these observations are fairly apparent: children will need help in dealing with complicated sentence patterns which extend beyond their usual auditory and oral experience, and in dealing with the various graphic aids in their textbooks. They must also be guided in judging materials at face value no matter who the author happens to be, even in their textbooks.

What factors in the material being read are most likely to influence the reader's ability to comprehend adequately?

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### The Reader

Because of the strong component of reasoning in comprehension, which is also a recognized component of intelligence, we observe many marked relationships between the intelligence of the reader and his literal comprehension. The ability to recognize inductive sequences of ideas leading to a conclusion, to apply

deductively a principle to new situations, to recognize cause-effect, comparison, contrast and other idea relationships depend to a marked degree upon the reader's intellectual powers. Pupils of less than average mental ability can be taught to use these types of thinking while reading, but only within the limits of those capacities in most instances.

A number of recent studies by interview techniques have tried to delve into some of the less obvious differences between the good and the poor comprehender. The interviews of elementary children by Piekarz (11) and of college students by Wark (20) while the students were reading indicate that the good comprehender tends to respond to reading in greater quantity of ideas and associations, in longer fragments and sentences. Samuels (14) has demonstrated this influence of associative thinking in a laboratory-type experiment. His results again indicate that when material contains ideas that are readily associated (moon-bright-earth-light-night-plane) the reader responds with faster reading and better comprehension. This evidence of the significance of the reader's involvement in what he reads by associative thinking certainly has implications for instruction. If he is to comprehend well, it is apparent that the reader must first be prepared for the ideas of the selection, either just before reading by the readiness activities initiated by the teacher, or he must be prepared by reason of his previous experiential background. Even more important, the reader must somehow be led to react (think) to the material and the concepts it offers, if he is to achieve more than the barest, literal recall.

What are the implications for the teacher for promoting comprehension through the reader's involvement in what he reads by associative thinking?

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Taken at face value, this insight into the comprehension process would imply that teachers should probably do a great deal more questioning (other than on sheer recall) when their pupils are reading. Perhaps the way to get pupils really involved in their reading would be to offer leading questions after each section of a reading unit or selection. This approach has been employed with some success in the Comprehension Power series of filmstrips offered by Educational Developmental Laboratories. After each paragraph or so, the projector is stopped while teacher and pupils discuss the material, draw conclusions, make judgments, and otherwise react. Just what questions or procedures are most likely to call forth associative thinking is a point we will discuss later in this chapter.

Major influences upon comprehension, as shown in many studies, are the beliefs, attitudes, and prejudices of the reader. Readers of all ages comprehend best those ideas that confirm their own opinions and beliefs and tend to forget opposing views and facts, even when the latter are recognized clearly during the reading (11). Even the mistakes in literal comprehension tend to be exaggerations rather than minimizations of the facts. Attitudes or prejudices do not appear to interfere with literal comprehension, but when judgment or evaluation is involved, their influence is manifest. In fact, reading materials such as newspapers, magazines and even books do not seem to create opinions on important issues so much as to reflect the beliefs of the public they seek to serve (6).

How may the reader's beliefs, attitudes and prejudices effect his comprehension?

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The reader can, upon occasion, be induced to accept certain beliefs temporarily, provided they do not conflict with his previous ideas on the subject.

The prestige of the author, the tone of the material, naive acceptance of the printed word, lack of background information and the writer's skillful use of the propaganda tricks of his trade, as well as lack of training in critical reading or thinking often lead the reader to blind acceptance of ideas. This uncritical reading is, as we have implied, most common in subjects or areas when the reader does not feel involved or that his beliefs are challenged.

The influence of the reader's beliefs and attitudes upon comprehension and critical reading must be reckoned with when we are attempting to improve these reading behaviours. We must employ such techniques as presenting materials offering opposing views on an issue, intensive group discussion of the factual and opinionative content, free exchange among pupils of arguments for their viewpoints, and opportunity for the group to make evaluations and judgments independently of the teacher's viewpoint. In all seriousness, Janis (7) even suggests that we should recognize the facilitating affect of eating while reading upon the reader's acceptance of persuasive materials. Perhaps we should conduct our efforts to improve comprehension and critical reading during lunch period or class parties.

What steps can the teacher take to reduce the effects of the reader's beliefs, attitudes and prejudices upon comprehension and critical reading?

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Recent research on the relationship of personality as reflected in thinking habits or cognitive style, as it is called, to reading has begun to yield interesting insights. For example, Santostefano (15) found differences between good and poor readers on a

Constricted-Flexible test of thinking. Poor readers seemed less able to limit their attention to the most significant elements of the stimulus field. Other personality or cognitive styles being distinguished are analytic-synthetic, objective-subjective, field dependent-field independent. As better tests and clearer definitions of cognitive style are evolved and validated, we may expect to discover more about this relationship between the reader's cognitive characteristics and his comprehension.

### The Reading Process

In addition to factors inherent in the material and the reader himself, the manner in which a reading task is approached and executed certainly affects comprehension. The purposes of the reader, as clarified by prereading discussion, teacher's questions or by the reader himself, determine the type or kind and degree of comprehension that he achieves. If the reader thinks that his purpose is to secure only general ideas, he neglects and fails to retain the details, and vice versa. His rate of reading is influenced by the purposes he sees, and this, in turn, determines the degree of comprehension. Students who can set strong purposes for their reading comprehend significantly better than those who set vague purposes. This relationship is present whether the student or the teacher clarifies the purposes of reading, an obvious implication for instructional efforts to improve comprehension (5).

What is the effect of the teacher or pupil clarifying or establishing strong purposes for the reading of any material?

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A number of researchers are intensively exploring the role of proper questioning in determining comprehension. Should teacher questions precede reading, follow it, or be interspersed at certain intervals in order to direct or measure comprehension of smaller

units? Using college students, Frase (2) found that short tests (two questions) given immediately after a brief passage (20 lines) were best for comprehension. Factual questions given before each section tended to limit the reader's retention to the specific facts and also to reduce his other learnings. Even giving a simple instruction before the reading to read carefully was effective for both factual and incidental learning. Although the reader may be encouraged by his success with the questions following each small unit, this encouragement does not appear to have much effect upon his overall comprehension. In other words, his reading does not have to be interrupted (other than by the questions) to score his answers to the questions.

This research on questioning, which is confirmed by other studies at elementary and high school levels, raises some interesting questions regarding the values of prereading questioning. This practice has had wide acceptance among teachers and even pupils are commonly taught to preview reading materials before complete reading in order to structure questions that they will read to answer. The Frase study (2) and others like it indicate that attempting to direct children's reading or to improve comprehension by prereading questions does not have the expected results. When the questions are factual, they tend to channel the reader's efforts into finding only the specific facts demanded by the questions. Thus prereading factual questions does not help pupils to read "more carefully", or to show greater overall comprehension. Rather, the practice tends to reduce the depth of comprehension and limit the reader's retention of information not directly related to the questions. On the other hand, even factual questions, administered at frequent intervals after reading help the reader retain both the facts demanded and other information in the passage. As this sort of research continues, we may discover the effect of non-factual questions both before and after reading upon the types and degree of comprehension. At the moment, prereading of factual questions seems less valuable than we formerly thought.



Factual questions appear to have different effects, depending upon when or where they are set. How do factual pre-reading questions effect comprehension?

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What effects do factual questions have if they are inserted at frequent intervals during the reading?

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One other factor inherent in the reading process which significantly affects comprehension is rate of reading. In turn, rate of reading reflects the reader's purpose for reading, as well as his set or attitude toward acquiring information. Contrary to popular assumption, rapid reading is not always synonymous with good comprehension, nor are good comprehenders necessarily rapid readers. Rapid reading contributes to better comprehension only when the material is easy or familiar, and the rate of reading approximates the reader's speed for associating ideas. When the material is difficult for the reader, a fast rate of reading results in lessened comprehension. When the reader attempts to read at a faster than he can associate ideas, the end result again is less than normal comprehension. On the other hand, rapid reading of easy material pushes the reader toward better comprehension because it tends to focus his attention on the stream of ideas rather than on the words. In reading thusly, the reader's concentration is increased and the reading act becomes more like the act of thinking.

Conversely, slow reading in easy or average materials allows the reader to depart from the printed ideas in tangential, irrelevant thoughts, since he can usually think faster than he is reading. Slow reading focuses the reader's attention on word recognition, word meanings, and other mechanical aspects of the process, with consequent loss of retention of the ideas being expressed. Ideally then, we should teach each

reader to process easy or hard materials about as fast as he can manage them with maintenance of good comprehension. This suggests that pupils should be trained to read different materials at varying rates according to their ability to comprehend each readily and as fully as the task demands.

What is the relationship between rates of reading, difficulty of materials, and comprehension?

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### Developing Comprehension and Critical Thinking

As John E. Merritt pointed out in his review of comprehension at the International Congress on Reading in Paris, 1966 (9), there have been two opposed viewpoints on developing comprehension which have both failed to solve the problem. One group emphasizes long lists of comprehension skills and the need to develop these by carefully planned teacher-directed exercises. Apparently this group believes answering a lot of questions, time after time, will enable the student to show whatever type or degree of comprehension later reading tasks demand. Another group of experts believes that the answer to comprehension development is simply to start with the students' experiences and interests and exploit them. Actually both groups borrow ideas and training materials from each other and neither really practices what he preaches.

As a compromise between these viewpoints, this English reading expert suggests that:

1. Competence in comprehension may be developed only when reading materials are within the experience of the student and the reading is significant to the student.
2. Skill in comprehension will appear from the needs of a student engaged in reading to fulfill his own purposes.

3. It is the job of the teacher to arrange sequences of situations in reading which call forth the variety of comprehension behaviours desired.

To implement his suggestions, Merritt suggests early reading experiences must be experience-based, i.e. the language-experience approach. Using his own and other children's work as models, we can move toward critical evaluations, judgment, and retention of facts and inferences, much more readily than when children are asked to react to the writing of an adult. Difficulty levels, Merritt points out, are almost automatically controlled in vocabulary, style, subject matter, concept load, etc. Gradually other types of reading material from other sources will be introduced, first as reference materials, later as study sources. At the same time, the experiential background of the pupil will be constantly expanded by a variety of audiovisual aids, library and reference materials, and first-hand experience.

How does Merritt suggest that comprehension and critical reading abilities be developed right from the beginning stages of learning to read?

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Like the writers of this book, Merritt believes that development of comprehension and critical skills commences very early in the reading program. We also share the belief that comprehension and critical reading depend heavily upon the reader's background with the obvious implication that this must be strengthened by audiovisual aids, resource materials, discussion, informational presentation by the teacher, and vocabulary development.

To these concepts of comprehension development, we would add two more points of emphasis: first, that the types and degree of comprehension and critical reading that students will learn to show reflect the direct influence of the teacher's habits of questioning.

Secondly, few of the reading behaviours we expect to see in comprehension or critical reading, except perhaps vague main ideas and retention of scattered details, appear spontaneously among pupils. Even students who are good readers in that they can handle the materials of their grade level do not either feel the need or show facility in reading critically, unless urged or trained to do so. Even high school and college students focus on remembering facts and show little awareness of the need for evaluation, despite the fact that the materials they read may be slanted, distorted, or questionable. Is it feasible, then, from the very beginning stages of reading to direct children toward the patterns of comprehending and critical thinking we feel are essential by the nature of our questioning?

What other factors does Spache see as being necessary to develop comprehension and critical reading abilities?

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#### Strategies for Cognitive Growth

Experts from several disciplines such as educational psychology, creativity, and reading are vitally concerned with the problem of teaching students to think. These efforts have necessitated some redefinitions of both teaching and thinking. As Hilda Taba (18) points out, we have been accustomed to the concept of teaching as pouring out information to pupils, and then, by direct, factual questioning, asking pupils to recite this material back to its source. We have conceived of thinking "as a global process which seemingly encompasses anything that goes on in the head, from daydreaming to constructing a concept of relativity." (18 p.534) Both of these naive definitions are undergoing radical change as we will illustrate.

The primary point of an attack on this problem is the question whether teachers' questions presently stimulate the various types of thinking we wish children to employ. Secondary questions are the identification of the cognitive processes to be stimulated

and the relationship between these processes and teacher questioning.

Guszk (4) has completed a study of teacher questioning in reading which is very revealing. First, he determined the types of questions teachers commonly ask and recorded almost two thousand questions in second, fourth, and sixth grade classrooms. Secondly, he ascertained how many of these questions were answered correctly by the pupils. Third, he categorized the strategies of sequences of questions and remarks that teachers commonly employ.

As we might expect, Guszak found that the majority of questions were focused on recall, although the percentage of this type decreased from 66.5 in second grade to 48.4 and 47.6 in fourth and sixth grades. Other types of questions he identified were comparatively infrequent i.e. recognition, 10.2 to 16.3 percent; translation, .2 to 2.4 percent; conjecture, 5.7 to 7.9 percent; explanation, 3.8 to 8.1 percent; and evaluation 11.5 to 20.4 percent. Furthermore, he observed that the evaluation questions, which comprised 15 percent of all questions in the total study, were usually quite superficial since they seldom demanded more than a "yes" or "no" answer. In his opinion, only the conjecture and explanation questions demanded any depth of thinking, and these comprised only 13.7 percent of all questions in the three grades.

Guszak noted further that primary teachers asked proportionately more questions demanding recall of details than did intermediate teachers, certainly a desirable trend. Second grade teachers also asked more questions of all types than did other teachers. Apparently the concept of comprehension among primary teachers encompasses largely the recall of multitudinous, minute details of the stories read.

Summarize the most important findings of Guszak's research on teacher questioning in reading.

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Pupils congruence in answering teachers' questions was greatest in the second grade, probably because of the emphasis upon the details in short pieces of very simple material. Intermediate teachers questioned recall of details frequently also, but both they and the pupils failed in the answers much more frequently than the primary grades. Teachers in intermediate grades sometimes accepted incongruent answers from the children because they themselves did not recall the details from the longer, more difficult passages used. Perhaps this observation also reflects a tendency for teachers to use a set pattern of questions on recall of details, regardless of their own familiarity with the material, rather than to adapt their questions to the nature of each new passage.

Observation of teachers' questioning strategies revealed many patterns of interaction with pupils. The most frequent pattern was simply a question and a congruent response  $Q=R+$ . This type of pattern tended to be closely associated with the recall type of question, and accounted for more than half of all teacher-pupil interactions. The second most frequent pattern of interaction involved what Guszak calls a Question-Response Episode. The teacher usually offers a setting purpose question, or a guiding or rhetorical remark, then without waiting for student response, asks a second direct question to which a pupil responds. Other common strategies of questioning involved the teacher asking for verification from the text of a student response to her initial question; the teacher asking for justification of a student response, by him or by the others, by the use of explanation. This pattern tended to follow a conjectural type of question. A third, but very infrequent pattern, involved asking the group for an evaluation of a student response by her preceding question. Guszak concludes these informative observations of teacher questioning by pungently remarking, "About the only thing that appears to be programmed into the students is the nearly flawless ability to anticipate the trivial nature of the teachers' literal questions . . . the students have learned well to parrot back an endless recollection of trivia." (4 p.234)

In her study of children's thinking, Taba (18) carried the study of teacher-pupil interaction somewhat farther than Guszak. For example, she studied sequences of questions and their effect upon the level of thought

manifested in children's responses. Taba distinguishes three levels of thinking - concept formation (differentiating, grouping, categorizing); generalizations and inferences; explanation or prediction. She strongly urges that teachers should address their questions to the objective they have for the class's thinking, sequencing questions to elicit the types of thinking desired. As types of teachers' questions, she identifies those that focus on a fact; refocus thinking on a different level, i.e. from factual to explanatory, extend thought by a question to which a number of children can contribute; and control thought by suggesting a line of thought by the children, as classifying, explaining etc.

What are the three levels of thinking that Taba distinguishes?

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Taba's study of classroom discussions revealed very interesting facts about teachers' effects upon children's thinking. She found that when teachers attempted to raise a level of thought too early in the discussion, children's ability to maintain thinking at that level was soon exhausted and discussion rapidly deteriorated to a lower level. However, by first focussing thought (on concepts, categories, observed facts) then extending the thinking to a number of children, and later lifting the level to more complex modes of thinking (generalizations, inferences, explanations), the discussion results in a gradual movement of the majority of students toward higher levels of thinking. In any such sequence of questions, the time spent focusing on a certain level of thinking would, of course, depend upon the depth of the material being discussed. Thus although the general trend of level of questions would gradually move upward, various sequences would differ perhaps in the number of each type of question, as the thinking moved from the concept level to generalizations and inferences to explanations and predictions.

By what means does Taba suggest that teachers should attempt to raise their pupil's thinking?

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We have provided sufficient background for acceptance of the concept that comprehension and critical reading are, in large measure, the outcome of the teacher's strategy in handling questions on the reading materials.

How does Spache sum up the findings of the research on methods of developing comprehension and critical abilities?

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We have also reviewed some of the research on comprehension and noted several significant implications. These indications for classroom practice might be summarized in this fashion.

1. Pupils cannot be expected to show good comprehension or critical reading in unfamiliar materials or those burdened with difficult vocabulary.
2. Pupils will need direct training in handling the graphic and study aids commonly found in textbooks.
3. Comprehension and critical reading abilities might be limited by the child's reasoning capacities.
4. Readers who show good comprehension are characterized by a strong tendency to associative thinking, reacting while reading.
5. Prereading questioning tends to channel the pupil's reading toward specific facts and thus to limit the breadth of comprehension possible in the material.
6. Pupils need to be taught how to suspend judgments based on their personal beliefs or prejudices until they have clearly understood the author's presentation, when reading passages that differ from their viewpoints. Growth in this ability may



6. be promoted by providing frequent opportunity to read and discuss contradictory viewpoints.
7. Teachers should make every effort to clarify the purposes for reading all assigned materials. Pupils should be given frequent opportunity to state and discuss their purposes, and the manner in which they adapt their reading to those avowed purposes.
8. Post-reading questions offered after each short unit of a reading task tend to promote better comprehension. These questions do not have to be scored until the entire reading is completed.
9. Training in reading materials at different rates according to their difficulty and the purposes for reading should be given all children.
10. Training in increasing rate of reading up to that point where comprehension begins to decrease should be offered in simple materials to all children. This is most effective if conducted on an individual basis of each child competing with himself, rather than trying to equal the rates of reading of other pupils.
11. We must constantly be aware that comprehension is based upon the experiential background the reader brings to the printed-page. Therefore we must insure that the reader can relate to the content by providing a variety of prereading activities which help to prepare him for that content.
12. Among younger pupils, we can most readily promote analytic and critical behaviours if we employ reading materials composed by other children. Then as his experiential background grows through the activities and resource materials the teacher provides, the child may gradually approach text-book-like materials, while maintaining his analytic and critical reading abilities.
13. The kinds of comprehension and critical reading behaviours that pupils learn reflect the teacher's habits in probing the outcomes of their reading.

14. Skill in literal comprehension does not insure ability in analytic or critical thinking in the act of reading.

You should read this summary of the implications for the classroom teacher carefully.

#### Teachers' Questions and Children's Reading

You have mentioned some of the research on teacher strategies for stimulating children's thinking. Perhaps the most practical next step would be to implement this research by illustrating precisely what kinds of teacher questions might be used in this approach to comprehension. We will follow the categories of questions discussed in the excellent book on this subject by Sanders. This book, *Classroom Questions: What Kinds?* presents its subject in much greater detail than we can here. It will be very profitable reading for any teacher attempting to improve her interaction with pupils, particularly when teaching in the content fields.

1. Memory - recognizing or recalling information as given in the passage. Sanders distinguishes four kinds of ideas on the memory level of thinking:

a) facts -

Who did \_\_\_\_\_?  
 When did \_\_\_\_\_?  
 How many \_\_\_\_\_?  
 What are \_\_\_\_\_?

b) definitions of terms used, and perhaps explained, in the text -

What is meant by \_\_\_\_\_?  
 What does \_\_\_\_\_ mean?  
 What meaning did you understand for \_\_\_\_\_?  
 Define \_\_\_\_\_  
 Explain what we mean by \_\_\_\_\_

c) generalizations - recognizing common characteristics of a group of ideas or things

What events led to \_\_\_\_\_?  
 In what three ways do \_\_\_\_\_ resemble \_\_\_\_\_?  
 How did \_\_\_\_\_ and \_\_\_\_\_ effect (cause) \_\_\_\_\_?  
 \_\_\_\_\_?

1. d) values - a judgment of quality

What is said about \_\_\_\_\_?

Do you agree?

What kind of a boy was \_\_\_\_\_?

What did \_\_\_\_\_ do that you wouldn't?

2. Translations - expressing ideas in different form or language.

Tell me in your own words how \_\_\_\_\_?

What kind of a drawing could you make to illustrate \_\_\_\_\_?

How could we restate \_\_\_\_\_?

Could we make up a play to tell this story?

How?

What does the writer mean by the phrase \_\_\_\_\_?

Write a story pretending you are \_\_\_\_\_

3. Interpretation - trying to see relationships among facts, generalizations, values, etc. Sanders recognizes several types of interpretation.

- a) Comparative - are ideas the same, different, related or opposed

How is \_\_\_\_\_ like \_\_\_\_\_?

is \_\_\_\_\_ the same as \_\_\_\_\_?

Why not?

Which three \_\_\_\_\_ are most alike in \_\_\_\_\_?

Compare \_\_\_\_\_ with \_\_\_\_\_ in \_\_\_\_\_

How does \_\_\_\_\_ today

resemble \_\_\_\_\_ in \_\_\_\_\_?

- b) Implications - arriving at an idea which depends upon evidence in the reading passage.

What will \_\_\_\_\_ and \_\_\_\_\_ lead to?

What justification for \_\_\_\_\_ does the author give?

If \_\_\_\_\_ continues to \_\_\_\_\_ what is likely to happen?

What would happen if \_\_\_\_\_?

3. c) Inductive thinking - applying a generalization to a group of observed facts

What facts in the story tend to support the idea that \_\_\_\_\_?

What is the author trying to tell you by \_\_\_\_\_?

What does the behaviour of \_\_\_\_\_ tell you about him?

What events led to \_\_\_\_\_?

Why?

- d) Quantitative - using a number of facts to reach a conclusion.

How much has \_\_\_\_\_ increased?

What conclusions can you draw from the table (graph) on page \_\_\_\_\_?

How many times did \_\_\_\_\_ do \_\_\_\_\_?

Then what happened?

How many causes of \_\_\_\_\_ can you list?

- e) Cause and Effect - recognizing the events leading to a happening.

Why did the boy \_\_\_\_\_?

How did the boy make \_\_\_\_\_ happen?

What two things led up to \_\_\_\_\_?

When the girl \_\_\_\_\_, what had to happen?

Why did \_\_\_\_\_ happen?

4. Application - solving a problem that requires the use of generalizations, facts, values and other appropriate types of thinking.

How can we show that we need a traffic policeman at the crossing at the south end of our school?

If we want to raise hamsters in our classroom, what sort of plans will we have to make?

John has been ill for several days. What could we do to help him during his illness? To show him we think of him?

5. Analysis - recognizing and applying rules of logic to solution of a problem; analyzing an example of reasoning.

Discuss the statement, "All teachers are kind and friendly."

Some people think that boys can run faster than girls. What do you think?

John was once bitten by a dog. Now John dislikes all dogs. Is he right or wrong in his feelings? Why?

6. Synthesis - using original, creative thinking to solve a problem.

What other titles could you think of for this story?

What other ending can you think of for this story?

If John had not \_\_\_\_\_, what might have happened?

Pretend you are a manufacturer of pencils who wishes to produce a much better pencil. Tell what you might do.

7. Evaluation - making judgments based on clearly defined standards.

Did you enjoy the story of \_\_\_\_\_?  
For what reasons?

What do you think of \_\_\_\_\_ in this story?  
Do you approve of his actions?

In the textbook, the author tells us that \_\_\_\_\_ felt \_\_\_\_\_. Is this a fact or the author's opinion? How do you know?

This story has a very happy ending. Should all stories end happily? Why not?

The author of our textbook apparently believes that the American colonists were right in their actions. Do you agree? What do you suppose the British said about the colonists?

Write a short story about your favourite person in history. Tell why this person is your favourite.

In this chapter, we have tried to provide a depth of background for the teacher who is attempting to improve comprehension. As we have shown again and again, comprehension and critical reading are modes of thinking which are taught to children by the stimulus of the discussion in the classroom. We did not provide examples of "good comprehension exercises" as most reading textbooks do. We believe that such printed exercises or tests have a place in the development of comprehension, but a minor part to be sure. What we have tried to show is that if employed, such exercises must be used selectively, critically in fact, by the teacher. All too often such exercises sample only the simplest types of thinking, memory or parrot-like recall of details.

Nor can such an approach to teaching comprehension be justified because it appears to enable students to score better on reading tests. The broader concept of comprehension we are suggesting will also accomplish this short-sighted goal, as well as promote the development of comprehension and critical reading in depth.

We intended to present the complete picture of thinking in reading, to encourage teachers to make exercises and tests and ask questions which cover the entire gamut of cognitive processes. Development of any real depth of comprehension or the faculty of intelligent, critical reading is impossible, if we depend upon drill books, workbooks and other stereotyped, repetitive materials. Our goals will be reached only by diversifying our questioning constantly, and by including on almost every occasion, as many as possible of the types of stimuli to thinking we have outlined above.

Summarize Spache's key recommendations concerning developing children's thinking in reading.

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## APPENDIX C

THE PRE FACTUAL ADJUNCT QUESTIONS AND DIRECTIONS.

PREVIEW QUESTIONS AND DIRECTIONS:DEVELOPING COMPREHENSIONAND CRITICAL READING

(Chapter 14, Spache and Spache)

Instructions concerning the use of these preview questions and directions

For each section in this chapter preview questions and directions for reading are recorded below. You are asked to read each of these BEFORE studying the relevant section in the chapter. You should use these questions and directions to guide your reading of each section.

PREVIEW

P.454

Read the preview of this chapter to determine the main factors that influence what a reader retains while reading.

COMPREHENSION AS SKILL DEVELOPMENT

P.455

Read this section to determine what the main problems are associated with the naming of the specific reading skills that may constitute comprehension and critical reading. You should also determine what the only components are of the reading act that have been established by factor analysis studies so far.

COMPREHENSION AS A THINKING PROCESS

P.459

This section should be read to determine what the implications are for instructional procedures once comprehension is conceived as a thinking process.



COMPREHENSION AS DEFINED BY THE TESTS

P.461

You should read this section to see why the authors are so critical of standardised comprehension tests. What kinds of reading abilities should tests of reading comprehension attempt to measure?

DEFINING CRITICAL READING

P.462

Read this brief section to establish what elements could be considered to constitute critical reading. Is the author's definition of critical reading acceptable to you?

FACTORS INFLUENCING COMPREHENSION AND CRITICAL READING

P.463

This is an important section and you should read it to determine the main factors that may influence or effect reading comprehension under three categories:

- a. the materials being read,
- b. the characteristics of the reader himself, and,
- c. the manner in which the reading task is approached.

DEVELOPING COMPREHENSION AND CRITICAL READING

P.469

You should read this section to gain further understanding of the factors that influence the development of comprehension and critical reading abilities. Note particularly Merritt's and Spaches' suggestions here.

STRATEGIES FOR COGNITIVE GROWTH

P.471-475

In this section you will study the findings of a very important investigation carried out by Guszak on teachers' questions. You should note particularly the types of questions most commonly

STRATEGIES FOR COGNITIVE GROWTH (cont'd)

P.471-475

asked by teachers and how these change as one progresses up the school. Do you think Guszak was justified in making his observation concerning teacher questioning? Taba's study is also a very important one and you should examine carefully the implications for teachers, arising from these investigations into methods raising children's level of thinking. The summary of implications for classroom practice on pp.474-5 is a very useful one.

TEACHERS' QUESTIONS AND CHILDREN'S READING

P.475-9

The authors outline the kinds of questions Sanders sees as necessary to develop children's abilities in comprehension and critical reading. You should skim this section and note the range and variety of questions that can be used by the teacher. You should also note how Spache recommends these should be used.

## APPENDIX D

INSTRUCTIONS AND INTRODUCTORY COMMENTS FOR RESEARCH  
ASSISTANTS AND THE EXPERIMENTAL GROUPS USING PRE OR  
POST REASONING ADJUNCT QUESTIONS.

Instructions and Introductory Comments for the  
"Mathematics Syllabus Study" Experimental and  
Control Groups.

I. General instructions and comments for all groups.

Distribute the reading material and note paper.  
Ask the subjects not to open their booklets.

Say: "This morning you are all taking part in an investigation, the results of which could be of use to students at all levels of education. The usefulness of the results of course will be influenced by the manner in which you approach the task. We are grateful for the cooperation you have already demonstrated by so readily agreeing to take part in the investigation.

Since you are not in the direct sense studying the teaching of reading at the moment, you may find it a little difficult to become involved in the task of reading material directly related to this subject.

The following comments should assist you to see this task in its proper perspective. You can in fact look on the next two periods as the start of your syllabus study in reading. It is very important for the investigation you are taking part in today, that you are able to see the relevance of the material you are going to read, to your present task of training to be a teacher.

I think it is true to say that one of the most important school learning tasks facing children today is for them to become effective readers as soon as possible in their school careers. And of course if they are to become effective readers they need to become effective thinkers. Therefore a vital teaching task that you will face when you take over your own class, or when you are out on school section, will be your responsibility to teach your pupils to read, and of course, to think effectively, at their various levels of capability.

## I. (cont'd)

Included in, and central to the task of learning to read then, is the development of the individual's comprehension and critical reading abilities. This is the area of reading that you are going to study today.

You will find that you will have to read this material carefully because there are many important factors involved in the task of developing children's comprehension and critical reading abilities.

These cannot be stated, explained and developed in a few simple sentences."

Supervisor: Please go to the specific instructions for your particular group.

## II. Specific instructions and comments for each group.

## A. Post-Reading, Reasoning Question Group (Overt Response).

1. Issue the Chapter 14 booklets and the "question booklet". Point out that they do not have to read the section on pp.458-9, "Comprehension as a Decoding Process".
2. Say: "This morning you are being asked to read this chapter following instructions recorded on the first page of your question booklet. Look at this now please."
3. Read these instructions to them.  
(See Appendix E)
4. Ask them to use a piece of note paper to cover the relevant question until they have completed reading the section. Demonstrate how this may be done by sliding a piece of paper down a page of the question booklet, exposing only the last line and page number of a particular section.
5. (As for "Specific instruction 7", Post-Reading, Factual Question Group.)

## A. (cont'd)

6. Say: "Please read the material in each section BEFORE you read the relevant question. Thank you for the cooperation which you have shown in this matter. Are there any questions? Enter your name and college group number in the appropriate space on the front page of your questions. Enter the time which I will give you now in the appropriate space. You may begin reading now."
7. The time that each subject requests the post test is to be recorded below the starting time already recorded in their question booklets.
8. Collect each subject's Chapter 14 booklet and question booklet before the post test is commenced.

## B. Pre-Reading, Reasoning Question Group, (Overt Response).

The instructions for this group follow the same steps as those for the Post-Reading, Reasoning Question Group except for two changes:

1. Paragraph 4 is not necessary for this group.
2. The first sentence of Paragraph 7 will read for the Pre-Reading group:

"Please read the question BEFORE you read the relevant section."

## C. No Question Group.

The instructions for this group are identical with those for the "No Question" Reading Syllabus Group recorded in Appendix A

## APPENDIX E

INSTRUCTIONS TO BE READ BY THE EXPERIMENTAL GROUPS  
USING PRE OR POST ('INSERTED, REVIEW') REASONING  
ADJUNCT QUESTIONS.

Inserted, Review Questions for use with Spache &  
Spache Chapter 14, Developing Comprehension  
and Critical Reading Skills

Instructions concerning the use of inserted, review  
questions to aid your comprehension and retention of  
the material being read.

For each section of this chapter, questions have been prepared to assist you to review what you have just read. These questions are set out on the accompanying sheets.

You are asked to read each section relevant to each question carefully BEFORE YOU READ THE QUESTIONS. It is suggested that you cover the questions with a sheet of paper, but leave the line indicating the end of each section exposed. You are then asked to read the question and try to answer it without referring back to the relevant material. If you find that you cannot answer the question satisfactorily then you are at liberty to refer back to find the answers. The end of each section to which a question refers is indicated by a page number and the last few words in that section. e.g. p.454 (... the teacher stimulates). At the conclusion of your reading would you please indicate by placing the relevant letter beside your finishing time if you had to refer back.

- a. not at all      b. occasionally      c. regularly  
d. constantly

Thank you for your cooperation in this important investigation.



Prereading Questions for use with Spache & Spache

Chapter 14, Developing Comprehension &

Critical Reading Skills

Instructions concerning the use of prereading questions to aid your comprehension and retention of the material being read

For each section of this chapter, prereading questions have been prepared and these are set out on the accompanying sheets. You are asked to read each question BEFORE you commence reading the relevant section and try to use the questions to guide your reading of the various sections. When you come to the end of the section relevant to the question, you should try to write out the answer to the question. (The end of the relevant section is indicated by a page number and the last few words in that section e.g. p.454 (... the teacher stimulates). You should try to answer the question without referring back to what you have just read, but if you find that you cannot recall some of the reasons you may refer back to the material.

At the conclusion of your reading would you please indicate by placing the relevant letter beside your finishing time if you had to refer back

- a. not at all      b. occasionally      c. regularly  
d. constantly

Thank you for your cooperation in this important investigation.

## APPENDIX F

THE QUESTION BOOKLET FOR THE PRE AND POST  
REASONING ADJUNCT QUESTION GROUPS.

DEVELOPING COMPREHENSION & CRITICAL READING SKILLSNAME: . . . . .GROUP: . . . . .TIME STARTED: . . . . .TIME FINISHED: . . . . .Preview (p.454)

p.454 (... the teacher stimulates)

1. Why is the readers' comprehension influenced by?
  - a. the purposes he has for his reading,
  - b. the instructions he is given before reading,
  - c. the pattern of questions he learns to anticipate,
  - d. the associations the teacher stimulates with what is being read?

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p.455 (... if the reader is so trained).

2. Why do the authors see critical reading simply as a type of comprehension?

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Comprehension as Skill Development (pp.455-458)

p.458 (... the total act of comprehension).

3. Why is it difficult to name the specific reading skills that constitute comprehension and critical reading?

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Do not read "Comprehension as a Decoding Process"

Comprehension as a Thinking Process (pp.459-461)

p.461 (... more complex processes).

4. Why do none of the authors of the various models of comprehension conceive the process as one of **separate** or discrete skills?

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Comprehension as Defined by the Tests (pp.461-462)

p.462 (... the process of comprehension).

5. What are some of the main reasons why the results of scores obtained on tests of "reading comprehension" must be looked on with some degree of scepticism?

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Defining Critical Reading (pp.462-463)

p.463 (... a modicum of reading ability).

6. Why must critical reading be taught continuously to all pupils?

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Factors Influencing Comprehension & Critical Reading (pp.463-469)The Material Being Read (pp.463-464)

p.464 (... even in their textbooks).

7. Why should the presence of unfamiliar vocabulary, difficult structure, style and concept density, or the name or prestige of the author affect the readers' comprehension?

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The Reader (pp.464-467)

p.465 (... these capacities in most instances)

8. Why is there a marked relationship between the intelligence of the reader and reading comprehension?

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p.466 (... the barest, literal recall).

9. Why should a reader be prepared for the ideas contained in a selection to be read?

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p.466-7 (... his beliefs are challenged).

10. Why do the readers beliefs attitudes and prejudices influence his comprehension?

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p.467 (... lunch period or class parties).

11. How may the effects of beliefs, attitudes and prejudices upon comprehension be reduced?

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#### The Reading Process (pp.467-469)

p.468 (... to improve comprehension (5)).

12. Why is the manner in which the reader approaches the reading task seen as being so very important?

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p.468 (... than we formerly thought).

13. Why are factual, prereading questions seen as a limiting influence upon readers' comprehension? Do inserted factual questions have the same effect?

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p.469 (... as the task demands).

14. Why is it that neither rapid reading nor slow reading have been found to be necessarily synonymous with good comprehension?

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Developing Comprehension & Critical Thinking  
(pp.469-471)

p.470 (... and vocabulary development)

15. Why does Merritt see the need for early reading experiences to be experienced-based?

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p.471 (... the nature of questioning?)

16. Why is it necessary for the teacher to be constantly alert to ways and means of developing his pupils' comprehension and critical reading abilities?

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Strategies for Cognitive Growth (pp.471-475)

p.473 (... recollection of trivia (4p.234)

17. Why is Guszak's research so important in the field of developing comprehension and critical reading abilities?

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p.473 (... to explanations and predictions)

18. Why does Taba strongly urge teachers to address their questions to the type of thinking they desire to develop?

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19. How does she suggest that teachers should attempt to raise their pupils' levels of thinking?

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p.474 (... on the reading materials. (3rd line from top of page)

20. Why is the teachers' strategy in handling questions so crucially important for developing children's comprehension and critical reading abilities?

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p.475 (... the act of reading)

21. Which of the summarized implications for developing comprehension and critical reading abilities would you see as being the most significant?

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Teachers' Questions and Children's Reading

(pp.475-479)

p.478 (... this person is your favourite)

22. How could you as a teacher make use of Sander's categories of questions?

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p.499 (... to thinking we have outlined above)

23. Why did the authors not concentrate on providing plenty of examples of "good comprehension exercises" and tests in their attempt to demonstrate how children's comprehension and critical reading abilities could be improved?

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## APPENDIX G

THE OBJECTIVE-TYPE POST TEST AND ANSWER SHEET USED  
FOR IMMEDIATE AND LONG TERM (TEN WEEKS) RETENTION  
MEASURES.

COLLEGE READING SYLLABUS STUDY TESTDIRECTIONS:

This is a test to see how well you have read Chapter 14 of your course text; Spache G.D. & Evelyn B., Reading in the Elementary School, 2nd Edit., Boston, Allyn & Bacon, 1969, pp.454-479.

You are to commence this test as soon as you have completed your reading of this chapter.

You must not refer back to the material you have just read in this chapter.

This is a multiple-choice, objective-type test. You are to select the MOST APPROPRIATE statement to complete the sentence. All your answers are to be made on the answer sheet provided by putting a mark through the letter representing your choice.

For example: a    ~~b~~    c    d

If you wish to alter your original choice do so by placing a circle round the letter(s) you have marked thus:

a    (b)    c    d

Write your name, group and room number on your answer sheet now.

DO NOT MARK YOUR TEST BOOKLET.

YOU MAY TURN OVER THE PAGE AND START THE TEST NOW.

1. To promote an active reaction in reading a teacher must:
  - a. direct his pupils' reading by setting many prereading questions.
  - b. allow plenty of time for recreational reading.
  - c. set frequent comprehension tests to evaluate his pupils' progress in this direction.
  - d. stimulate plenty of associations with what is being read.
2. The major problem in naming separate comprehension and critical reading skills is that:
  - a. far too many skills go to make up these processes.
  - b. few, if any skills named by authorities in their lists can be shown to exist.
  - c. not sufficient satisfactory terms can be devised to name all the skills.
  - d. some difficulty is always experienced in arriving at an acceptable hierarchy of terms.
3. The models depicting the act of comprehension in reading constructed by Cleland, Robinson & Gray all suggest that comprehension consists of:
  - a. a large number of discrete skills which later blend into the total act of comprehension.
  - b. an ability that is very nearly entirely controlled by the reader's level of intelligence.
  - c. a moderate number of subskills that are clearly identifiable and taught.
  - d. a group of processes that operate virtually simultaneously.

GO ON TO NEXT PAGE

4. Studies of reading comprehension scores show that the commonest fault in many tests lies in the fact that the type of answer demanded depends on the reader's:
  - a. reasoning ability.
  - b. informational background.
  - c. beliefs and prejudices.
  - d. meaning vocabulary.
5. To be of any real use it would appear that reading comprehension tests should be designed to measure primarily children's abilities to:
  - a. organise, synthesise, and apply facts read.
  - b. make judgements, use imagination and hold to their beliefs.
  - c. follow instructions, understand sequence, and modify their attitudes.
  - d. all of these.
6. Spache defines critical reading as a degree of comprehension which involves the exercises of critical judgement on the nature and value of what is read. This derives from:
  - a. the ability of the individual to think intuitively.
  - b. the reading of a wide range of provocative reading materials.
  - c. the criteria or knowledge obtained through the personal experiences of the reader.
  - d. the constant verbal interaction conducted with the individual's peer group.

GO ON TO NEXT PAGE

7. Within the materials being read, certain factors operate against the reader gaining a high level of comprehension. The most important of these is his ability to:
  - a. follow the sequence of events in the unit.
  - b. understand the style of writing.
  - c. accept the author's authority.
  - d. deal with the vocabulary in the unit.
8. Studies have shown that students who comprehend well tend to respond to reading through:
  - a. a greater quantity of ideas and associations.
  - b. becoming more emotionally involved in what he is reading.
  - c. finding ideas that conflict with his own.
  - d. having a limited but well - established system of beliefs and knowledge.
9. If the reader is to comprehend well it is apparent that he must be prepared for the ideas of the selection. This is best achieved by:
  - a. readiness activities initiated by the teacher.
  - b. his previous experimental background.
  - c. being led to react to the content the material contains.
  - d. all of these.

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10. In reading, attitudes or prejudices have their greatest interfering effect on:
- a. literal comprehension.
  - b. evaluation of material.
  - c. finding the main idea.
  - d. association of ideas.
11. A major criticism of the function of many newspapers and magazines is that they:
- a. do not seem to create opinions on important issues.
  - b. seem to create confusion among opinions on important issues.
  - c. seem to reflect the beliefs of the public they serve.
  - d. do not seem to reflect the beliefs of the public they serve.
12. Which of the following attributes has been found to be the most significant characteristic of students who comprehend well? These students appear to:
- a. have a strongly developed set of beliefs and values.
  - b. be able to set strong purposes for their reading.
  - c. have a wide visual span and a good visual memory.
  - d. be able to hold their own views against all opposition.

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13. In attempting to improve comprehension of a selected passage it has been found that factual questions given before a selection:
- a. limit the reader's retention to the specific facts, and reduce other learnings.
  - b. improve the reader's retention to the specific facts and increase other learnings.
  - c. be superior to simply instructing the reader to read carefully.
  - d. increase the depth and extent of the reader's retention of the material.
14. In trying to assist a reader to comprehend during his reading, factual prereading questions seem to be:
- a. a most valuable type of question to set.
  - b. more valuable than was previously thought.
  - c. less valuable than was previously thought.
  - d. of no value in his development.
15. Factual questions, administered at frequent intervals during the reading, help the reader to retain the facts of the passage:
- a. and other information.
  - b. but little other information.
  - c. and react to the ideas presented.
  - d. but confuses him with the other information.

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16. A factor which affects comprehension is rate of reading. Rapid reading and good comprehension appear to be:
- a. nearly always synonymous.
  - b. not always synonymous.
  - c. unattainable in most cases.
  - d. the complete antithesis of each other.
17. Rapid reading contributes to better comprehension when the rate of reading approximates the ability of the reader to:
- a. move his eyes smoothly along the line of print.
  - b. limit his number of fixation pauses.
  - c. retain what he is reading.
  - d. associate the ideas presented.
18. Comprehension of material read rapidly is highest when the material is:
- a. full of new ideas.
  - b. stimulating and provocative.
  - c. well written.
  - d. easy or familiar.

GO ON TO NEXT PAGE

19. The development of comprehension and critical reading skills should commence:
  - a. when the pupil enters high school.
  - b. around the intermediate school years.
  - c. at about the middle primary school years.
  - d. very early in the reading programme.
20. One of the most important factors to influence the individual's level of comprehension has been found to be:
  - a. the direct influence of the teachers' habits of questioning.
  - b. the indirect influence of the teachers' habits of questioning.
  - c. the range of comprehension exercises handled in the classroom.
  - d. the range of materials available in the classrooms.
21. Guszak found that the majority of teachers' questions in the primary and intermediate grades focussed on:
  - a. recognition.
  - b. translation.
  - c. explanation.
  - d. recall.

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22. From Guszak's research it appeared that teachers' questioning techniques soon encouraged their pupils to:
- a. read quickly and comprehend factual matter at a high level.
  - b. anticipate the trivial nature of the teachers' literal questions.
  - c. think in depth concerning what they were required to read.
  - d. discriminate between fact and opinion.
23. In order to develop in their pupils type of thinking desired, Taba strongly urges teachers to take particular care in:
- a. the planning of evaluation procedures.
  - b. the sequencing of pertinent questions.
  - c. the preparing of inferential-type questions.
  - d. the discussing of key points.
24. Teachers' questions in reading, if they are to have a beneficial effect on children's thinking should:
- a. begin at a low level then only gradually progress to a high level thinking.
  - b. quickly progress to high level thinking.
  - c. begin at a low level but quickly rise to a high level of thinking.
  - d. maintain a high level throughout.

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25. In any well-designed reading programme the development of children's comprehension and critical reading abilities must be a major objective. In the opinion of the writers of this chapter these abilities will be promoted best in programmes that provide pupils with opportunities:
  - a. obtain practice with a wide variety of written comprehension questions.
  - b. obtain practice with such comprehension subskills as listed by McCanne & Williams.
  - c. develop modes of thinking mainly through discussion.
  - d. anticipate the nature of the teacher's questioning strategies.
26. In order to aid the development of comprehension and critical thinking in reading Merritt recommends that early reading activities should be:
  - a. directed to the use of carefully graded published materials.
  - b. such as to involve the child emotionally.
  - c. based on the child direct and vicarious experiences.
  - d. complemented by suitable television programmes.

COMPREHENSION and CRITICAL READING

No. correct: \_\_\_\_\_

ANSWER SHEETName: \_\_\_\_\_ Group: \_\_\_\_\_ Date: \_\_\_\_\_  
Room: \_\_\_\_\_Read carefully the instructions on the first page of  
your test booklet.

- |     |   |   |   |   |
|-----|---|---|---|---|
| 1.  | a | b | c | d |
| 2.  | a | b | c | d |
| 3.  | a | b | c | d |
| 4.  | a | b | c | d |
| 5.  | a | b | c | d |
| 6.  | a | b | c | d |
| 7.  | a | b | c | d |
| 8.  | a | b | c | d |
| 9.  | a | b | c | d |
| 10. | a | b | c | d |
| 11. | a | b | c | d |
| 12. | a | b | c | d |
| 13. | a | b | c | d |
| 14. | a | b | c | d |
| 15. | a | b | c | d |
| 16. | a | b | c | d |
| 17. | a | b | c | d |
| 18. | a | b | c | d |
| 19. | a | b | c | d |
| 20. | a | b | c | d |
| 21. | a | b | c | d |
| 22. | a | b | c | d |
| 23. | a | b | c | d |
| 24. | a | b | c | d |
| 25. | a | b | c | d |
| 26. | a | b | c | d |

## APPENDIX H

THE INTRODUCTORY REMARKS FOR THE UNWARNED, ESSAY-  
TYPE POST TEST AND THE TEST QUESTION USED FOR THE  
SECOND POST TEST.

### Chapter 14 "Unstructured Question" Directions

Last week you took part in an investigation that was trying to determine the effects of different directions for your reading, on your comprehension and short-term retention.

From the excellent results obtained it was clearly evident that you had approached this task seriously with intent to achieve highly. The mean for the test was in fact 78%. In order for the investigation to be completed a measure must be obtained of your long term retention since both short and long term retention are important factors in reading. You will recall that the chapter you read last week dealt with "Developing Comprehension and Critical Reading Skills".

In the light of what you read in this chapter, you are to list and briefly explain each of what you consider to be the TEN most important factors that were seen by the authors to influence the effective development of comprehension and critical reading abilities in children.

You will have 20 minutes to do this.



APPENDIX I

THE INSTRUCTIONS AND INTRODUCTORY COMMENTS FOR  
THE UNWARNED, LONG TERM (TEN WEEKS) RETENTION,  
OBJECTIVE-TYPE TEST.

Instructions and Introductory Comments for Retest of  
Research Groups on their Reading of Spache and Spache,  
Chapter 14.

Say, "In the middle of August you took part in an important research project. The main aim of the research was to try to establish if your comprehension and retention could be influenced by the way you are asked to do required reading.

You will remember that you were required to read Chapter 14 of Spache on Comprehension and Critical Reading. You were all then asked to complete a 26 item, multiple choice-type test on the material you had just read. You did this test very well and your marks were very high, which clearly demonstrated that you had applied yourself seriously to the task.

A week later, you will remember you were asked to list the ten most important factors that influence the development of children's comprehension and critical reading abilities. Again you appeared to do this very well - after initially thinking that you couldn't remember anything, and thinking the request rather humorous!

Today to complete this research you are being asked to re-do the initial 26 items, objective-type test to see if there are any differences among the long term retention scores of the three groups. As you are doing the test you should try to choose your answers on the basis of your present knowledge and understanding, and not on the basis of how you may have answered the question last time. Your understanding might have improved with age like good wine!

If any of you have read Chapter 14, or any part of it since being required to read it during lecture time could you please record this information on your answer sheet, along with how ("just read it", or "did the directed reading questions") and why you did it!

If any of you have any helpful observations to make concerning any problems occurring in the original reading and test situation, Mr Doake would be grateful if you would record this on the back of your answer sheet.

Thank you all very much for the way you have cooperated in this matter. The results of the whole research will be available in 1971. If you wish to know the scores you obtained on the two tests these will be available from Mr Doake as from tomorrow.

You may start the test now."

## APPENDIX J

THE READING SYLLABUS STUDY QUESTIONNAIRE USED  
IN 1969 AND 1970.

CHRISTCHURCH TEACHERS' COLLEGEREADING SYLLABUS STUDY QUESTIONNAIRE (1969, 1970)

Instructions: Where you are asked to make choices you should ring the letter(s) of your choice(s).

I. COURSE EVALUATION

The range of topics studied in this course were as follows:

- A. the nature of the reading process.
- B. reading readiness.
- C. factors influencing progress on reading.
- D. causes of reading failure.
- E. evaluating progress in reading (including testing a child).
- F. directed silent reading (including taking a lesson).
- G. reading in the junior school (including observation and taking a lesson).
- H. the aims and scope of reading.
- I. reading in the middle and upper school.

1. Would you add to this range of topics?

a. yes

b. no

2. If you would extend the range of topics, what would you add and why?
- 
- 
- 
3. Would you eliminate any topic(s)?
- a. yes
- b. no
4. If you would eliminate any topic(s) which one(s) would you remove and why?
- 
- 
- 
5. There were approximately 34 lecture hours in the course. Was this time:
- a. too much
- b. too little
- c. sufficient?
6. How would you rate the success of the course against the aims?
- a. highly successful
- b. successful
- c. occasionally successful
- d. did not succeed at all.

7. If "Reading" could be offered as a selected study would you take it?
  - a. yes
  - b. no
  - c. maybe
8. If you could take "Reading" as a selected study would you consider taking it for:
  - a. 1 year
  - b. 2 years
  - c. 3 years

II. THE COURSE OUTLINE

The course outline for the Reading Syllabus Study was fairly extensive. (20 foolscap pages):

1. Did you use it?
  - a. not at all
  - b. occasionally
  - c. regularly
2. Did you find it (a. difficult b. easy) to follow?
3. Did you find it (a. tedious b. stimulating) to follow?
4. If you used the course outline regularly do you think it helped you to:
  - a. achieve better in the course?
  - b. study more effectively for this particular course?
  - c. work harder than you usually do?
  - d. transfer any skills developed to other subject areas?

(You may ring any, all, or none of these choices).

5. If you used the course outline regularly, which aspects did you find helpful?

(You may ring any, all or none of these choices and you should double ring any aspect you found most helpful).

- a. aims for the course
- b. introductory statement for each topic
- c. general directions for reading chapters, sections of chapters, and notes issued
- d. directed reading questions
- e. explanations for cyclostyled material used
- f. assignment details

6. If you found the course outline to be of little or no use give your reasons and possible suggestions on alternative methods which would assist you in your studies.

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7. Assuming that careful attention would be given to balancing the work load required of students should (a. all b. most c. some d. not any) of your course outlines be similarly detailed?

Comment if desired.

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III. ASSIGNMENTS

During the Reading Syllabus Study you were asked to do assignments of varying kinds including "Directed Reading" and preparing for an examination. Looked at from the point of view of improving and extending your knowledge, understanding and ability in the field of the teaching of reading how would you rate these assignments, other than the "Directed Reading"?

1. Summarizing (e.g. Spache, Chapter 1. "The Nature of the Reading Process", Simpson. "More Important Than Techniques").
  - a. of little value
  - b. valuable
  - c. very valuable
  - d. cannot recall
2. Film summaries
  - i) unstructured "Why Can't Jimmy Read"
    - a. of little value
    - b. valuable
    - c. very valuable
    - d. cannot recall
  - ii) structured "They all Learn to Read"
    - a. of little value
    - b. valuable
    - c. very valuable
    - d. cannot recall

3. Administering reading tests and writing up the results. (Acknowledging the fact that this was probably the first time you had done this).
  - a. of little value
  - b. valuable
  - c. very valuable
  - d. cannot recall
4. Taking a "reading lesson".
  - i) standard class children (after testing)
    - a. of little value
    - b. valuable
    - c. very valuable
    - d. cannot recall
  - ii) infants
    - a. of little value
    - b. valuable
    - c. very valuable
    - d. cannot recall
5. Compiling a Reading Folder.
  - a. of little value
  - b. valuable
  - c. very valuable
  - d. cannot recall

6. Preparing for an examination.
    - a. of little value
    - b. valuable
    - c. very valuable
    - d. cannot recall
  7. Additional comments if desired?
- 
- 
- 

#### IV. DIRECTED READING

During the Reading Syllabus Study course you were asked to do directed reading assignments which required you to write answers to questions for specific chapters, or parts of chapters.

1. What values for improving your reading do you see in the type of directed reading where you were asked to record answers to questions? You are asked to ring any of the following list that apply, in the light of your experience with this kind of direction for your reading. You should double ring any of the items below which you feel were markedly assisted by this type of directed reading.
  - a. helps you to make your reading more purposeful.
  - b. motivates you to read your text.
  - c. aids your understanding of what is being read.
  - d. helps you to find key ideas and supporting details.
  - e. assists you to become interested in what you are reading about.

1.
  - f. stimulates your thinking about what is being read.
  - g. reduces "verbalism" (slipping over words and ideas not understood).
  - h. increases your knowledge of the subject matter being studied.
  - i. helps you to prepare for tests and examinations.
  - j. makes you more aware of the intense concentration required for "study-type reading".
  - k. stops your mind "wandering off" on to other things.
  - l. causes you to read your text more than you would usually do.
2. Were there any disadvantages for you personally in this kind of assignment?
  - i) Did being directed to read and find answers to questions develop in you a negative attitude towards reading?
    - a. not at all    b. occasionally    c. often
  - ii) Did it restrict your establishing of your own purposes for the required reading?
    - a. not at all    b. occasionally    c. often
  - iii) Did it cause you to look only for the answers to the questions and ignore the remainder of the chapter?
    - a. not at all    b. occasionally    c. often
  - iv) Did it cause you to lose interest in what you were reading?
    - a. not at all    b. occasionally    c. often

2. v) Did it cause you to use someone else's assignment to obtain answers?  
a. not at all b. occasionally c. often
- vi) Did it restrict your thinking concerning what was being read?  
a. not at all b. occasionally c. often
- vii) Did it cause you to become antagonistic towards the main text used (Spache)  
a. not at all b. occasionally c. often
3. Through your course outline you were directed to read your texts by a variety of ways. Ring the method(s) you found helpful. (You may double ring any method you found most helpful).
- a. directed by page numbers and asked to read.
- b. directed to pages or chapters and asked to read carefully and note certain points.
- c. directed to pages or chapters by questions without written answers being required.
- d. directed to pages or chapters and required to answer questions in written form.
4. Additional comments if desired concerning methods of directing reading.

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## V. SUMMARISING

You were asked to summarise Chapter 1 of Spache as your first assignment for the Reading Syllabus Study. Few students used the techniques of tabulation and indentation demonstrated below.

e.g. I. Reading as Skill Development

A. Gray

1. perception
  - a. auditory
  - b. visual
2. comprehension
  - a. lines
  - b. etc. etc.

1. If you did not use these techniques of summarising was it because:
  - a. you had never been taught these skills?
  - b. you had been taught them but did not think to use them for this summary?
  - c. you knew how to use them but do not like using them?
  - d. you find these techniques very difficult to use?
  - e. you feel that precis and paraphrase techniques are more useful?

(Ring the statement most applicable to you).
2. If you did use these techniques of summarising was it because:
  - a. you had been taught these skills?
  - b. you had taught yourself these skills?

## 2. (cont'd)

- c. you had obtained a copy of the summary from another student who had already done the Reading Syllabus Study?

(Ring the statement most applicable to you).

## 3. For learning the skills of tabulation and indentation the sample summary for Chapter 1 of Spache was:

- a. of little value
- b. valuable
- c. of great value

VI. YOUR READING ABILITY

- 1. Do you think you could improve your general reading ability?
  - a. not at all
  - b. a little
  - c. a lot
- 2. If a reading improvement course were offered at College on a voluntary basis would you attend it?
  - a. yes
  - b. no
  - c. maybe
- 3. How would you rate your reading ability compared for example with other College students?
  - a. worse
  - b. about the same
  - c. better

4. How are you usually directed to any required reading on your College textbooks?
- 
- 
- 
- 
5. Has your reading ability improved since you have been at College?
- a. not at all
- b. a little
- c. a lot
6. If you feel that your reading ability has improved what has contributed to this improvement?
- 
- 
-



## APPENDIX K

ADDITIONS TO THE READING SYLLABUS STUDY QUESTIONNAIRE  
USED FOR THE SECOND SEMESTER GROUPS IN 1970.

ADDITIONS TO READING SYLLABUS STUDYQUESTIONNAIRE FOR SECOND SEMESTER GROUPS 1970

4. Has your reading ability improved since you have been at College?  
Place a cross over the letter which corresponds to your choice.
- a. not at all
  - b. a little
  - c. a lot
5. If you feel that your reading ability has improved, what has contributed to this improvement?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

VII. REQUIRED COLLEGE READING

1. Without reference to the Reading Syllabus Study, What methods do your lecturers use MOST to direct you to required reading, relevant to their courses?  
(Ring the statement most applicable to your experience.)
- a. By using written questions and directions to guide your reading specifically.
  - b. By stimulating your interest in the particular topic so that you want to do the required reading.
  - c. By stating that there will be a test on the required reading.
  - d. By giving you page numbers or chapters to read before the topic had been covered in lectures.

1. e. By giving your page numbers or chapters to read after the topic has been covered in lectures.
  - f. Any other method (give a brief outline).
- 
- 

2. What action do you most often take with respect to your required reading for your various courses? Do not include the directed required reading for the Reading Syllabus Study in your answers. Please place a cross (X) over the number corresponding to your choice for each question.

- a. Read the relevant material carefully taking notes.

1. never
2. occasionally
3. usually
4. not at all

- b. Read the relevant material carefully, underlining and annotating your text.

1. never
2. occasionally
3. usually
4. not at all

- c. Read all the relevant material quickly trying to select and remember the key points.

1. never
2. occasionally
3. usually
4. not at all

## 2. (cont'd)

d. Read some of the relevant material quickly trying to select and remember the key points.

1. never
2. occasionally
3. usually
4. not at all

3. Your course outline for the Reading Syllabus Study contained study guides in the form of questions and directions for your reading. When you were required to write out the answers to these questions and directions which of the following procedures did you use and to what extent did you use them?

Please place a cross (X) over the number corresponding to your choice for each question.

a. Did you read the introductory or preview statement in the course outline for each topic?

1. not at all
2. occasionally
3. usually
4. always

b. Did you read the question or direction, then read the relevant section looking for the answer?

1. not at all
2. occasionally
3. usually
4. always

c. Did you read the relevant section then read the question and find the answers by looking back?

1. not at all
2. occasionally
3. usually
4. always

3. d. For your required reading during the course did you preview the material to be read? (Previewing entails an organised, rapid coverage of reading materials during which the reader examines the organisation of the section to be read, tries to establish whether the information contained in it is relevant to his purposes, and then sets up his purposes for reading).
1. not at all
  2. occasionally
  3. usually
  4. always
- e. Did you simply look for the answers to the questions without reading the whole section?
1. not at all
  2. occasionally
  3. usually
  4. always
- f. If none of these categories coincide with what you did, outline briefly the procedure you did follow when doing "directed reading".
- 
- 
- 
- 
4. When you were directed to do required reading without written answers being required to what extent did you use the following procedures?
- a. Did the required reading by writing out the answers to the questions and directions.
1. never
  2. occasionally
  3. usually
  4. always

4. b. Did the required reading by using the questions and directions to guide my study and underlined or annotated my textbook. (Cross out underlined - or annotated, if one of them does not apply).
1. never
  2. occasionally
  3. usually
  4. always
- c. Did the required reading by using the questions and directions simply as guides to help me find the key ideas and facts.
1. never
  2. occasionally
  3. usually
  4. always
- d. If none of these procedures coincide with what you did, outline briefly what procedures you usually followed when doing required reading.

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5. How much of the required reading for this course would you estimate that you did?
1. none
  2. some
  3. most
  4. all
6. What usually caused you to do your required reading for this course?

Please RANK these factors in the order of their influence on causing you to do your required textbook reading with '1' being the most influential and '5' being the least. Use all the

## 6. (cont'd)

figures from 1 to 5 in your ranking.

- ( ) a. By being directed to read specific pages or chapters.
- ( ) b. By being interested in the particular topic or subject.
- ( ) c. By having to read in order to carry out assignments more effectively.
- ( ) d. By having specific guides for required reading in the form of questions and directions.
- ( ) e. By being required to read for exams and tests.

7. Would you outline in your own words what you think of "directed reading" (specific questions and directions) as a means of guiding your own textbook reading.

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## APPENDIX L

THE SUMMARY OF THE RESULTS OF STUDENT RESPONSES TO  
THE 1969 AND 1970 READING SYLLABUS QUESTIONNAIRES.



An Analysis of Student Responses to the  
Reading Syllabus Study Programme

Introduction

This questionnaire was administered to first and second year students during 1969 and 1970 when they completed the Reading Syllabus Study course. Only the sections of the questionnaire that may be considered relevant to this investigation are reported here. In examining this summary the following points should be borne in mind:

1. The course outline for the Reading Syllabus Study contained lists of questions and directions for the majority of the assigned reading for this course. (See Appendix R)
2. The number of questionnaires analysed varies, but for the majority of items the  $n=453$ .
3. The subheadings from the original questionnaire are included in brackets for the various sections.
4. In some cases the wording for the items has been altered to assist in making this report briefer and more readable.

## Summary of Results

## (II. Use of the Course Outline)

## 1. Did you use it?

	No.	%
a. not at all	16	4
b. occasionally	127	28
c. regularly	310	68
	453	100

## 4. If you used the course outline regularly do you think it helped you to:

	n=453	
	No.	%
a. achieve better in the course?	199	44
b. study more effectively for this particular course?	284	63
c. work harder than you usually do?	190	42
d. transfer any skills developed to other subject areas?	69	16

5. If you used the course outline regularly, which aspects did you find:

- A. helpful?  
B. most helpful?

		n=453			
		A Help- ful	B Most Help- ful	A+B No.	A+B %
		No.	No.	No.	%
a.	aims for the course	96	5	101	22
b.	introductory state- ment for each topic	127	13	140	31
c.	general directions for reading chapters, sections of chapters, and notes issued	247	51	298	66
d.	directed reading questions	243	95	338	75
e.	explanations for cyclostyled material issued	144	19	163	36
f.	assignment details	283	35	318	70

7. Assuming that careful attention would be given to balancing student work load, how many of your course outlines should be detailed like the reading syllabus study one?

		No.	%
a.	all	166	40
b.	most	130	31
c.	some	108	26
d.	not any	13	3
		417	100

## (Directed Reading)

1. Values seen by students in improving their reading performance through being required to use questions to guide their assigned reading.

- A. assists  
B. markedly assists

		n=453			
		A Assists	B Mark- edly Assists	Total A+B	Total A+B
		No.	No.	No.	%
a.	helps you to make your reading more purposeful.	233	112	345	76
b.	motivates you to read your text.	167	35	202	45
c.	aids your understanding of what is being read.	203	67	270	60
d.	helps you to find key ideas and supporting details.	268	121	389	86
e.	assists you to become interested in what you are reading about.	85	8	93	20
f.	stimulates your thinking about what is being read.	157	29	186	41
g.	reduces "verbalism"(slipping over words and ideas not understood).	177	40	217	48
h.	increases your knowledge of the subject matter being studied.	244	35	279	62

## 1. cont'd

Values seen by students in improving their reading performance through being required to use questions to guide their assigned reading.

- A. assists  
B. markedly assists

		n=453			
		A Assists	B Mark- edly Assists	Total A+B	Total A+B
		No.	No.	No.	%
i.	helps you to prepare for tests and examinations.	230	22	252	56
j.	makes you more aware of the intense concentration required for "study-type reading".	204	30	234	52
k.	stops your mind "wandering off" on to other things.	84	10	94	21
l.	causes you to read your text more than you would usually do.	284	51	335	74

(Directed Reading cont'd)

2. Disadvantages seen by students in having to use questions for guiding their reading.

		not at all occasion- often ally					
	n	No.	%	No.	%	No.	%
a. developed in you a negative attitude toward reading.	444	199	45	205	46	40	9
b. restricted you in establishing your own purposes for required reading.	430	224	52	155	36	51	12
c. caused you to look only for answers to questions and ignore the remainder of the chapter.	449	41	9	240	54	168	37
d. caused you to lose interest in what you were reading.	440	205	42	189	39	46	9
e. caused you to use someone else's assignment to obtain answers.	438	353	80	77	18	8	2
f. restricted your thinking concerning what was being read.	434	187	43	198	46	49	11
g. caused you to become antagonistic toward the main text used.	443	144	32	185	42	114	26

(Directed Reading cont'd)

## 3. Methods of directing required reading seen by students as being:

- A. helpful  
B. most helpful

		n=453					
		A		B		A + B	
		Helpful		Most helpful			
		No.	%	No.	%	No.	%
a.	directed by page numbers and asked to read.	92	20	16	4	108	24
b.	directed to pages or chapters and asked to read carefully and note certain points.	211	47	54	12	265	59
c.	directed to pages or chapters by questions without written answers being required.	86	19	11	2	97	21
d.	directed to pages or chapters and required to answer questions in written form.	206	45	139	31	345	76

## (Summarising)

1. Reasons selected by students for not using the outlining skills of tabulation and indentation when required to summarise a chapter of their text.

	No.	%
a. had never been taught these skills.	148	49
b. had been taught them but did not think to use them.	62	21
c. knew how to use them but do not like using them.	23	8
d. find these techniques difficult to use.	18	6
e. feel that precis and paraphrase techniques are more useful.	50	17
	301	100

3. Usefulness of a sample summary for learning the outlining skills of tabulation and indentation.

	No.	%
a. of little value	28	21
b. valuable	78	58
c. of great value	28	21
	134	100



## (Your Reading Ability)

1. Do you think you could improve your general reading ability?

	No.	%
a. not at all	12	4
b. a little	127	41
c. a lot	168	55
	307	100

2. If a reading improvement course were offered at College on a voluntary basis would you attend it?

	No.	%
a. yes	124	41
b. no	24	8
c. maybe	152	51
	300	100

3. How would you rate your reading ability compared for example with other College students?

	No.	%
a. worse	48	17
b. about the same	210	73
c. better	29	10
	287	100

(Your Reading Ability cont'd)

- 4\* How are you usually directed to any required reading in your College textbooks?

The responses of two 1969 syllabus study groups of students were analysed with the following results.

		1969	
		No.	%
a.	Simply given page numbers or chapters to read.	145	83
b.	Directed to specific topics.	4	2
c.	By being given questions as guides.	5	3
d.	By being given page numbers or chapters to read for a test.	17	9
e.	By being told to look for certain points relevant to the topic.	4	2
		175	100

(\* This question was "structured" for the final 1970 syllabus study group and the results are included in the next section of this summary.)

5. Has your reading ability improved since you have been at College?

		No.	%
a.	not at all	43	15
b.	a little	199	71
c.	a lot	39	14
		281	100

(Your Reading Ability cont'd)

6. If you feel that your reading ability has improved, what has contributed to this improvement?

From a group of 80 first year students  
30 indicated specifically that "directed  
reading" had assisted them in improving  
their reading ability.

## Additions to Reading Syllabus Study

### Questionnaire

#### Introduction

From experience gained through analysing the Reading Syllabus Study Questionnaire results for the 1969 and first semester 1970 groups of students, an attempt was made to obtain additional information concerning further specific reading habits and practices at the college level. When examining the results obtained for these additional questions the following points should be kept in mind:

1. The results reported here are those obtained from first and second year students.
2. The first year group only, completed the first two questions.

## (Required College Reading)

1. Without reference to the Reading Syllabus Study, what methods do your lecturers use MOST to direct you to required reading, relevant to their courses?

		First Years	
		No.	%
a.	By using written questions and directions to guide your reading specifically.	11	14
b.	By stimulating your interest in the particular topic so that you want to do the required reading.	21	3
c.	By stating that there will be a test on the required reading.	37	47
d.	By giving you page numbers or chapters to read before the topic has been covered in lectures.	20	26
e.	By giving you page numbers or chapters to read <u>after</u> the topic has been covered in lectures.	8	10
		78	100

## (Required College Reading) cont'd

2. What action do you most often take with respect to your required reading for your various courses?

		First Years (n=79)							
		never		occasion- ally		usually		always	
		No.	%	No.	%	No.	%	No.	%
a.	Read the relevant material carefully taking notes.	7	9	48	61	22	28	2	2
b.	Read the relevant material, underlining and annotating your text.	16	20	38	48	22	28	3	4
c.	Read the relevant material quickly trying to select and remember the key points.	14	18	37	47	22	28	6	7
d.	Read some of the relevant material quickly trying to select and remember key points.	18	23	44	56	9	11	8	10

## (Required College Reading) cont'd

3. What procedures did you follow when you were required to write out the answers to questions and directions for assigned reading?

		First and Second Year Students								
		never occasion- usually always ally								
		n	No.	%	No.	%	No.	%	No.	%
a.	Read the introductory or preview statement in the course outline for each topic.	161	15	9	56	35	58	36	32	20
b.	Read the question or direction, then read the relevant section for the answer.	157	11	7	42	27	83	53	21	13
c.	Read the relevant section then read the question and found the answers by looking back.	153	30	20	95	62	23	15	5	3
d.	Previewed the material to be read.	167	60	36	78	47	25	15	4	2
e.	Simply looked for the answers to the questions without reading the whole section.	157	50	32	74	47	32	20	1	1

## (Required College Reading) cont'd

4. When you were directed to do required reading WITHOUT WRITTEN ANSWERS BEING REQUIRED to what extent did you use the following procedures?

		First and Second Year Students								
		never		occasion- ally		usually		always		
		n	No.	%	No.	%	No.	%	No.	%
a.	Wrote out the answers to the questions and directions.	158	44	28	57	36	31	20	26	16
b.	Used the questions and directions to guide my study and underlined or annotated my textbook.	137	40	29	39	29	43	31	15	11
c.	Used the questions and directions simply as guides to find key ideas and facts.	159	24	15	62	39	58	37	15	9

5. How much of the required reading for the Reading Syllabus Study course would you estimate that you did?

		First and Second Year Students	
		No.	%
a.	none	1	1
b.	some	15	9
c.	most	83	52
d.	all	60	38
		159	100



(Required College Reading) cont'd

6. Would you outline in your own words what you think of "directed reading" (specific questions and directions) as a means of guiding your own textbook reading.

Although this is an open-ended item students' observations could be classified easily into three broad categories: favourable, unfavourable, and ambivalent. Out of 160 students completing the questionnaire:

- a. 110 were in favour of "directed reading".
- b. 22 were opposed to directed reading.
- c. 5 were both in favour and opposed to directed reading.
- d. 23 offered no comment.

A random sample from the three categories is included in this report in Appendix Q

THE INSTRUCTIONS FOR THE ADMINISTRATION OF THE  
COLLEGE READING QUESTIONNAIRE.

APPENDIX M

THE INSTRUCTIONS FOR THE ADMINISTRATION OF THE  
COLLEGE READING QUESTIONNAIRE.

College Reading Questionnaire: Instructions  
for Administration

Distribute the students as widely as possible over the lecture room. Issue the questionnaires but ask the students not to start completing these until after you have read the instructions to them.

Say:

"This questionnaire is part of a study being carried out investigating various aspects of College students' reading. For the results to be useful and reliable, it is essential that you do at least three things:

1. Study each question carefully, especially those where you are asked to rank or check a number of factors.
2. Select your answers frankly.
3. Be prepared to offer comment where possible.

You are not required to place your name on your questionnaire."

Now turn to Question 14 (Question 11, 1969). It is possible that at least one of the factors listed is not applicable to you because you may not have had that particular kind of experience. You should therefore exclude that item from your ranking.

You may now proceed to complete your questionnaire."

## APPENDIX N

THE 1969 COLLEGE READING QUESTIONNAIRE.

CHRISTCHURCH TEACHERS' COLLEGECOLLEGE READING QUESTIONNAIRE - 1969

Place a check (/) over the numbers corresponding to the Syllabus Studies you have taken this year.

1. Reading, Spelling and Handwriting
2. Social Studies
3. Mathematics
4. Science
5. English
6. Art
7. Music
8. Physical Education

Place a check (/) over the numbers corresponding to the Selected Studies you have taken this year.

1. English
2. Art
3. Music
4. Physical Education
5. History
6. Geography
7. Mathematics
8. Science
9. French

University work. (State subjects) \_\_\_\_\_

Place a check over the letter (/) corresponding to your choice. Where you wish to indicate emphasis place a double check, e.g. (/).

1. Do you use reading as a leisure-time activity?
  - a. not at all
  - b. occasionally
  - c. regularly

2. If you use reading as a leisure-time activity which of the following do you read MOST?
  - a. newspapers
  - b. magazines
  - c. fiction
  - d. non-fiction
3. Do you use the College library?
  - a. not at all
  - b. occasionally
  - c. regularly
4. Does the College library meet your reading needs?  
Non-fiction
  - a. not at all
  - b. occasionally
  - c. usually
  - d. always  
Fiction
  - a. not at all
  - b. occasionally
  - c. usually
  - d. always
5. Do you use the University library?
  - a. not at all
  - b. occasionally
  - c. regularly
6. Does the University library meet your non-fiction reading needs?
  - a. not at all
  - b. occasionally
  - c. usually
  - d. always

7. In comparison with your High School library do you use the College and/or University libraries?
- a. not as much
  - b. as much
  - c. more
  - d. much more
8. For your College studies this year you were required to buy a number of texts. How many of these did you buy?
- a. none
  - b. some
  - c. most
  - d. all
9. How many of your texts do you share with or borrow from other students?
- a. none
  - b. some
  - c. most
  - d. all
10. How much of the required reading do you estimate that you do?
- a. a little
  - b. some
  - c. most
  - d. all
11. What usually causes you to read your textbooks? Please RANK these factors in the order of their influence on causing you to do your required textbook reading with 1 being the most influential and 5 being the least. At least one factor may not be applicable to you. Do not rank it if this is so.
- ( ) a. By being directed to read specific pages or chapters.

## 11. (cont'd)

- ( ) b. By being interested in the particular topic or subject.
  - ( ) c. By having to do research-type reading for assignment purposes. (e.g. essays)
  - ( ) d. By being directed to required reading through questions for which written answers have to be recorded.
  - ( ) e. By being required to read for exams or tests.
  - ( ) f. Any other reasons? \_\_\_\_\_
- 

12. When you read for study purposes what do you usually do? Please RANK these in order of the frequency with which you use these methods of study.

- ( ) a. Simply read the relevant sections trying to understand and remember what you read.
- ( ) b. Underline key points and supporting details and annotating occasionally. (Recording comments in margins.)
- ( ) c. Take notes in the form of a precis or paraphrase.
- ( ) d. Make an outline (summary) of the required reading by using tabulation and indentation techniques.  
 e.g. A -----  
       1 -----  
       2 -----  
       B -----  
       etc
- ( ) e. By skimming or scanning to pick out the key points and supporting details without careful reading.

## 13. Do you think your reading ability has improved this year?

- a. not at all
- b. a little
- c. a lot



14. The following factors have been identified by other College students as contributing to their reading improvement. Place a check (✓) beside any of these factors which you feel has contributed to any improvement in your own reading ability this year. You should double check (✓✓) any factors which you feel have contributed most.

- ( ) a. By being required to do more reading from more textbooks than previously.
- ( ) b. Found the textbooks more interesting than previously.
- ( ) c. "Study Techniques" course.
- ( ) d. By being directed to read certain sections of the texts carefully and noting particular points.
- ( ) e. By being given "directed reading" for certain topics in the form of written questions which required you to locate and record answers.
- ( ) f. By having to do research-type reading for assignment purposes.
- ( ) g. By being given specific assistance for required reading by lecturers. Outline in your own words the type of assistance given and why you found it helpful.

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- ( ) h. By being required to summarize certain sections.
  - ( ) i. University studies.
  - ( ) j. By having to read for tests and exams.
- Any other factors.

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15. Do you think you could improve your reading ability?
- a. not at all
  - b. a little
  - c. a lot
16. If a reading improvement course were offered on a voluntary basis would you attend it?
- a. yes
  - b. no
  - c. maybe
17. The following is a list of specific factors that may cause difficulty in reading. Place a check beside any of the factors that you feel detract from your ability to read effectively. Double check any factors which you think have a serious effect.
- ( ) a. personal reading vocabulary is not sufficiently extensive
  - ( ) b. experience difficulty in identifying key ideas and supporting details.
  - ( ) c. generally have difficulty in comprehending what is read.
  - ( ) d. read too slowly.
  - ( ) e. have no effective method of reading a chapter.
  - ( ) f. suffer from "verbalism" (slipping over words and ideas and not understanding them).
  - ( ) g. do not read enough.
  - ( ) h. do not like reading.
  - ( ) i. tend to read only because I am told to and do not establish my own purposes for what I am required to read.
  - ( ) j. always read at the same speed.

## 17. (cont'd)

- ( ) k. tend to "sub-vocalise" (read the words aloud to myself - "internalised speech").
- ( ) l. tend to "regress" frequently (looking back over what has already been read due mainly to loss of meaning).
- ( ) m. have difficulty in concentrating on what is being read and get to the bottom of the page and find your mind on "other things".

Any other factors.

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18. The following is a list of factors that may have caused you to experience some difficulty in doing your required text book reading. You are asked to RANK these factors in the order of their having caused you difficulty with 1 indicating the factor that has influenced your ability to read effectively most, and 5 indicating the factor that has had the least influence.

- ( ) a. little or no interest in the subject matter.
- ( ) b. found the text book material too difficult because of vocabulary and meaning difficulties.
- ( ) c. did not really know what you were expected to find out from your reading.
- ( ) d. knew that there would be little or no action taken if the required reading was not done.
- ( ) e. have always found reading text book material difficult.

19. How are you usually directed to do any required reading? State what action you usually take.

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20. Do you feel that the College has any responsibility to help you improve your reading ability of College texts?

- a. yes  
b. no

Give reasons for your answer if possible.

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## APPENDIX O

THE 1970 COLLEGE READING QUESTIONNAIRE.

CHRISTCHURCH TEACHERS' COLLEGECOLLEGE READING QUESTIONNAIRE - 1970

Place a check (/) over the numbers corresponding to the Syllabus Studies you have taken this year.

1. Reading, Spelling and Handwriting
2. Social Studies
3. Mathematics
4. Science
5. English
6. Art
7. Music
8. Physical Education

Place a check (/) over the numbers corresponding to the Selected Studies you have taken this year.

1. English
2. Art
3. Music
4. Physical Education
5. History
6. Geography
7. Mathematics
8. Science
9. French

University work (state subjects) \_\_\_\_\_

Place a check over the letter corresponding to your choice. Where you wish to indicate emphasis place a double check e.g. (//) Mark only one choice unless otherwise directed.

1. Do you use reading as a leisure-time activity?
  - a. not at all
  - b. occasionally
  - c. regularly

2. If you use reading as leisure-time activity which of the following do you read MOST?
  - a. newspapers
  - b. magazines
  - c. fiction
  - d. non-fiction
3. Do you use the College library?
  - a. not at all
  - b. occasionally
  - c. regularly
4. Does the College library meet your reading needs?
  - i) for non-fiction
    - a. not at all
    - b. occasionally
    - c. usually
    - d. always
  - ii) for fiction
    - a. not at all
    - b. occasionally
    - c. usually
    - d. always
5. Do you use the University library?  
(If you are not taking University studies do not mark questions 5 or 6 or 7.)
  - a. not at all
  - b. occasionally
  - c. regularly
6. Does the University library meet your reading needs?
  - a. not at all
  - b. occasionally
  - c. usually
  - d. always

7. In comparison with your High School library do you use the University library?
- a. not as much
  - b. as much
  - c. more
  - d. much more
8. In comparison with your High School library do you use the College library?
- a. not as much
  - b. as much
  - c. more
  - d. much more
9. For your College studies this year you were required to buy a number of texts. How many of these did you buy?
- a. none
  - b. some
  - c. most
  - d. all
10. How many of your texts do you share with or borrow from other students?
- a. none
  - b. some
  - c. most
  - d. all
11. If you do not intend to buy as high a percentage of the required texts next year as you did this year what is the reason for this? (You may check more than one reason and double check your most important reason if you do this).
- a. Because I found the College library was able to meet my text-book needs.



## 11. (cont'd)

- b. Because I found that I could borrow enough books from friends.
- c. Because I found that the textbooks used this year were generally too difficult.
- d. Because I found the textbooks used this year were generally uninteresting.
- e. Because I found that the textbooks used this year were not sufficiently relevant to my studies.
- f. Because I found that I did not have to use my textbooks this year to pass my courses.
- g. Because I found that not sufficient use was made of my textbooks for discussion and assignment purposes.

## 12. How much of the required reading do you estimate that you do?

- a. a little
- b. some
- c. most
- d. all

## 13. Which textbooks did you make most use of this year? Give brief reasons for each book listed. (You may list your books by author, title or the course in which you used them).

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14. What usually causes you to read your textbooks? Please RANK these factors in the order of their influence on causing you to do your required textbook reading with 1 being the most influential and 6 being the least. Place the numbers from 1 to 6 in the brackets corresponding to the degree of influence on you of each factor.
- (    ) a. By having to read as preparation for discussion.
  - (    ) b. By being required to read for exams or tests.
  - (    ) c. By having study guides or course outlines for the required reading in the form of questions and directions.
  - (    ) d. By having to do research-type reading for assignment purposes (e.g. essays).
  - (    ) e. By being interested in the particular topic or subject.
  - (    ) f. By being directed to read specific pages or chapters.
15. When you read for study purposes what do you usually do? Please RANK these in order of the frequency with which you use these methods of study.
- (    ) a. By skimming or scanning to pick out the key points and supporting details without careful reading.
  - (    ) b. Make an outline (summary) of the required reading by using tabulation and indentation techniques e.g.
 

A -----  
   1 -----  
   2 -----  
 B -----  
   etc
  - (    ) c. Underline key points and supporting details, and annotating occasionally. (Recording comments in margins.)
  - (    ) d. Simply read the relevant sections trying to understand and remember what you read.
  - (    ) e. Take notes in the form of a precis or paraphrase.

16. Do you think your reading ability has improved this year?
- a. not at all
  - b. a little
  - c. a lot
17. The following factors have been identified by other College students as contributing to their reading improvement. Place a check (/) beside any of these factors which you feel has contributed to any improvement in your own reading ability this year. You should double check (//) any factors which you feel have contributed most.
- ( ) a. By having to read for tests and exams.
  - ( ) b. University Studies.
  - ( ) c. By being required to summarize certain sections.
  - ( ) d. By having to do research-type reading for assignment purposes.
  - ( ) e. By being directed to read certain sections of the texts carefully and noting particular points.
  - ( ) f. "Study Techniques" course.
  - ( ) g. By being given "directed reading" for certain topics in the form of written questions which required you to locate answers.
  - ( ) h. Found the textbooks more interesting than previously.
  - ( ) i. By being given specific assistance for required reading by lecturers. Outline in your own words the type of assistance given and why you found it helpful.
- 
- 
-

18. Do you think you could improve your reading ability?
- a. not at all
  - b. a little
  - c. a lot
19. If a reading improvement course were offered on a voluntary basis would you attend it?
- a. yes
  - b. no
  - c. maybe
20. The following is a list of specific factors that may cause difficulty in reading. Place a check beside any of the factors that you feel detract from your ability to read effectively. Double check any factors which you think have a serious effect.
- ( ) a. have difficulty in concentrating on what is being read and get to the bottom of the page and find your mind on "other things".
  - ( ) b. tend to "regress" frequently (looking back over what has already been read due mainly to loss of meaning).
  - ( ) c. tend to "sub-vocalise" (read the words aloud to myself - "internalised speech").
  - ( ) d. always read at the same speed.
  - ( ) e. tend to read only because I am told and do not establish my own purposes for what I am required to read.
  - ( ) f. do not like reading.
  - ( ) g. suffer from "verbalism" (slipping over words and ideas and not understanding them).
  - ( ) h. have no effective method of reading a chapter.
  - ( ) i. do not read enough.
  - ( ) j. read too slowly.
  - ( ) k. generally have difficulty in comprehending what is read.

20. (cont'd)

- ( ) l. experience difficulty in identifying key ideas and supporting details.
- ( ) m. personal reading vocabulary is not sufficiently extensive.

Any other factors.

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21. The following is a list of factors that may have caused you to experience some difficulty in doing your required textbook reading. You are asked to RANK these factors in the order of their having caused you difficulty with 1 indicating the factor that has influenced your ability to read effectively most, and 5 indicating the factor that has had the least influence.

- ( ) a. knew that there would be little or no action taken if the required reading was not done.
- ( ) b. did not really know what you were expected to find out from your reading.
- ( ) c. have always found reading textbook material difficult.
- ( ) d. found the textbook material too difficult because of vocabulary and meaning difficulties.
- ( ) e. little or no interest in the subject matter.

22. The College lecturers responsible for your courses often require you to read books, parts of books and cyclostyled materials for various topics related to your courses. Under each method used for directing and encouraging you to do this required reading you are asked to indicate:
- A. the frequency with which each method is used.
  - B. the frequency with which you do the required reading in accordance with the method used for directing you.
- a. By stating that there will be a test on certain pages or chapters next lecture period or in the near future.
- How directed.
- A.
    - 1. never
    - 2. occasionally
    - 3. frequently
    - 4. always
- Your action.
- B.
    - 1. never
    - 2. occasionally
    - 3. frequently
    - 4. always
- b. By setting certain pages or chapters to be read for the purposes of taking part in a discussion next lecture period.
- A.
    - 1. never
    - 2. occasionally
    - 3. frequently
    - 4. always
  - B.
    - 1. never
    - 2. occasionally
    - 3. frequently
    - 4. always

## 22. (cont'd)

- c. By stimulating your interest in the particular topic so that you want to do the required reading.

A. 1. never  
2. occasionally  
3. frequently  
4. always

B. 1. never  
2. occasionally  
3. frequently  
4. always

- d. By simply asking you to read certain pages or chapters in preparation for the next lecture.

A. 1. never  
2. occasionally  
3. frequently  
4. always

B. 1. never  
2. occasionally  
3. frequently  
4. always

- e. By simply asking you to read certain pages or chapters after the topic has been covered in lectures.

A. 1. never  
2. occasionally  
3. frequently  
4. always

B. 1. never  
2. occasionally  
3. frequently  
4. always

23. Do you feel that the College has any responsibility to help you improve your ability to read your tests?

a. yes

b. no

Give reasons for your answer if possible.

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## APPENDIX P

THE SUMMARY OF THE RESULTS OF STUDENT RESPONSES TO  
THE 1969 AND 1970 COLLEGE READING QUESTIONNAIRES.

A Summary of the Results for the  
College Reading Questionnaire: 1969, 1970

### Introduction

The questionnaire was administered to the 1969 intake of students at the Christchurch Teachers' College (Primary Division) at the conclusion of their first year of training. It was administered again in an amended form to the 1970 intake of students at the same institution and at same time of the year.

For the summary of the results obtained from both these groups of students the 1970 form of the questionnaire has been used. Any changes made from the 1969 form will be recorded in the body of the report.

In examining the results of the summary of the results of these questionnaires the following points should be noted.

1. Wherever possible the results of the 1969 and 1970 questionnaires have been combined. The percentages obtained for each response were consistently similar for each intake of students, even when the order of the items within a question was changed for the 1970 form for questions 14, 15, 17, 20 and 21.
2. The results have been recorded as percentages rounded to whole numbers.
3. The total number of students choosing each item has also been recorded in all questions except where ranking was required.
4. For the ranking questions separate and combined percentages and totals have been calculated to indicate directional tendencies of student choices.
5. In some questions the wording has been changed from the original questionnaire form. This has been done in order to make this summary more readable. The form in which the students read the questionnaire is recorded in Appendix N and O.

## Summary of Results

1. Do you use reading as a leisure time activity?

1969/70	
	No.          %
a. not at all	16          3
b. occasionally	327        53
c. regularly	268        44
	611        100

2. If you use reading as a leisure-time activity which of the following do you read most?

1969/70	
	No.          %
a. newspapers	150        25
b. magazines	77         13
c. fiction	297        50
d. non fiction	72         12
	596        100

3. Do you use the College library?

1969/70	
	No.          %
a. not at all	8          1
b. occasionally	397        66
c. regularly	199        33
	604        100

## 4. Does the College library meet your reading needs?

		1969/70			
		non-fiction		fiction	
		No.	%	No.	%
a.	not at all	36	6	153	26
b.	occasionally	131	22	187	32
c.	usually	387	65	214	36
d.	always	41	7	38	6
		595	100	592	100

## 5. Do you use the University library?

		1969/70	
		No.	%
a.	not at all	8	4
b.	occasionally	149	72
c.	regularly	50	24
		207	100

## 6. Does the University library meet your reading needs?

		1969/70	
		No.	%
a.	not at all	4	2
b.	occasionally	39	19
c.	usually	111	55
d.	always	48	24
		202	100

7. (1969) In comparison with your High School library do you use the College and/or University libraries:

		1969	
		No.	%
a.	not as much?	65	24
b.	as much?	53	19
c.	more?	93	34
d.	much more?	62	23
		273	100

- 7 and 8 (1970). In comparison with your High School library do you use: (i) the University library and (ii) the College library:

		1970			
		University		College	
		No.	%	No.	%
a.	not as much?	51	50	118	37
b.	as much?	18	18	69	22
c.	more?	14	14	86	27
d.	much more?	19	18	46	14
		102	100	319	100

9 and 10 (8 and 9, 1969). For your College studies this year you were required to buy a number of texts.

- i. How many of these did you buy?
- ii. How many did you share and borrow?

		1969/70			
		(i) Buy		(ii) Share or borrow	
		No.	%	No.	%
a.	none	0	0	284	47
b.	some	49	8	307	51
c.	most	301	50	9	2
d.	all	254	42	0	0
		604	100	600	100

11. (1970 only). Reasons chosen by first year students for not purchasing as high a percentage of required textbooks for their second year at College.

		1970(n=322)	
		No.	%
a.	Because I found the College library was able to meet my textbook needs.	45	14
b.	Because I found that I could borrow enough books from friends.	73	23
c.	Because I found the textbooks used this year were generally too difficult.	6	2
d.	Because I found the textbooks used this year were generally uninteresting.	20	6
e.	Because I found that the textbooks used this year were not sufficiently relevant to my studies.	32	10
f.	Because I found that I did not have to use my textbooks this year to pass my courses.	86	27
g.	Because I found that not sufficient use was made of my textbooks for discussion on assignment purposes.	130	40

12. (10, 1969). How much of the required reading do you estimate that you do?

		1969		1970		1969/70	
		No.	%	No.	%	No.	%
a.	little	39	13	32	10	71	11
b.	some	132	46	117	36	249	41
c.	most	117	40	163	51	280	46
d.	all	1	1	10	3	11	2
		289	100	322	100	611	100

13. (1970 only). Which textbooks did you make most use of this year? Give brief reasons for each book listed.

Due to the open-ended nature of the question the results obtained are of a general nature. However it can be reported that:

- a. 494 students referred to the 5 textbooks (either by name or course) used in the 4 courses in which "question-guided" or "directed" reading was required on a regular basis for assignment and test purposes and that.
- b. 414 students referred to 34 textbooks (either by name or course) used in 15 courses which did not make regular use of "question guided" or "directed" reading.



14. (1969)

What usually causes you to read your textbooks?

		Ranking				
		Most Influence	Expressed as Percentages		Least Influence	
		1	2	3	4	5
a.	By being directed to read specific pages or chapters. ("f" 1970)	8	13	16	34	29
		21		63		
		100				
		n = 287				
<hr/>						
b.	By being interested in the particular topic. ("e" 1970)	9	6	17	30	38
		15		68		
		100				
		n = 289				
<hr/>						
c.	By having to do research-type reading for assigned ment purposes ("d" 1970)	42	34	18	5	1
		76		6		
		100				
		n = 288				
<hr/>						
d.	By being directed to required reading through questions for which written answers have to be recorded. (Altered 1970)	29	29	20	11	11
		58		22		
		100				
		n = 264				

## 14. (1969) cont'd.

What usually causes you to read your textbooks?

		Ranking				
		Most Influence	Expressed as Percentages		Least Influence	
e.	By being required to read for exams or tests. ( <sup>"b"</sup> 1970)	1 15	2 18	3 29	4 22	5 16
		33		20		
		100				
		n = 289				

## 14. \*What usually causes you to read your textbooks?

		Ranking					
		Most Influence		Expressed as Percentages		Least Influence	
		1	2	3	4	5	6
a.	By having to read as preparation for dis- cussion. (1970 only)	3	8	21	21	25	22
			11		42		47
			32			68	
				100			
				n=320			
b.	By being required to read for exams or tests. ("e" 1969)	37	21	15	14	9	4
			58		28		14
				73		27	
							100
				n=316			
c.	By having study guides or course outlines for required read- ing in the form of questions and directions. (altered for 1970)	24	15	14	16	15	16
			39		30		31
				53		47	
							100
				n=317			

\* For the 1970 form, this question was changed in four ways:

- i. An additional item was included ("a"),
- ii. the wording of item "c" was altered,
- iii. the order of the items was changed, and
- iv. the whole question became a 6 point ranking scale as against a 5 point scale in the 1969 form.

14. (1970) cont'd.

What usually causes you to read your textbook?

		Ranking					
		Most Influence		Expressed as Percentages		Least Influence	
		1	2	3	4	5	6
d.	By having to do re- search-type reading for assignment purposes. ("c" 1969)	19	33	20	15	10	3
		52			35		13
			72			28	
				100			
				n=316			
e.	By being interested in the particular topic. ("b" 1969)	8	8	12	17	18	37
		15			29		56
			28			72	
				100			
				n=317			
f.	By being directed to read spec- ific pages or chapters. ("a" 1969)	10	16	17	20	22	15
		26			37		37
			43			57	
				100			
				n=315			

15. (12, 1969) When you read for study purposes what do you usually do?

		Ranking				
		Most (Expressed as) Used Percentages			Least Used	
		1	2	3	4	5
a.	By skimming or scanning to pick out the key points and supporting details without careful reading. ("e" 1969)	9	18	19	25	29
		27			54	
		100				
		n =584				
<hr/>						
b.	Make an outline (summary) of the required reading by using tabulation and indentation techniques. ("d" 1969)	18	20	16	20	26
		38			46	
		100				
		n =575				
<hr/>						
c.	Underline key points and supporting details and annotating occasionally. (Comments in the margin)("b" 1969)	34	26	23	11	6
		60			17	
		100				
		n =575				
<hr/>						
d.	Simply read the relevant sections trying to understand and remember what you read. ("a" 1969)	25	18	16	21	20
		43			41	
		100				
		n =582				
<hr/>						
e.	Take notes in the form of a precis or paraphrase. ("c" 1969)	16	20	26	22	16
		36			38	
		100				
		n =577				

16. (13, 1969) Do you think your reading ability has improved this year?

a. not at all  
b. a little  
c. a lot

1969/70	
No.	%
86	14
449	74
76	12
611	100

18. (15, 1969) Do you think you could improve your reading ability?

a. not at all  
b. a little  
c. a lot

1969/70	
No.	%
12	2
334	55
257	43
603	100

19. (16, 1969) If a reading improvement course was offered on a voluntary basis would you attend it?

a. yes  
b. no  
c. maybe

1969/70	
No.	%
176	29
80	13
354	58
610	100

17. (14, 1969) Factors seen by students as:

- i. contributing to their reading improvement, and
- ii. contributing most to their reading improvement.

		1969/70(n=612)					
		(i) Contributed		(ii) Contributed Most		(i & ii) Total	
		No.	%	No.	%	No.	%
a.	By having to read for tests and exams. ("j" 1969)	345	56	28	5	373	61
b.	University studies (=207) ("i" 1969)	88*	43	75*	36	163*	79
c.	By being required to summarize certain sections. ("h" 1969)	270	44	28	5	298	49
d.	By having to do research-type reading for assignment purposes. ("f" 1969)	336	55	126	21	462	75
e.	By being directed to read certain sections of the texts carefully and noting particular points. ("d" 1969)	264	43	37	6	301	49
f.	"Study Techniques" course. ("c" 1969)	42	7	4	1	46	8
g.	By being given directed reading for certain topics in the form of written questions which required you to locate answers. ("e" 1969)	296	48	78	13	374	61

17. cont'd

(14, 1969) Factors seen by students as:

- i. contributing to their reading improvement, and
- ii. contributing most to their reading improvement.

		1969/70(n=612)					
		(i) Contributed		(ii) Contributed		(i & ii) Total	
		Work					
		No.	%	No.	%	No.	%
h.	Found textbooks more interesting than previously. ("b" 1969)	124	20	32	5	156	25
i.	By being given specific assistance for required reading by lecturers. ("g" 1969)	50	8	4	1	54	9
j.	By being required to do more reading from more textbooks than previously. (1969 only, n=290)	147+	51	25+	9	172+	59

\* n=207

+ n=290



20. (17 1969) Factors seen by students as detracting from their ability to read effectively.

1969/70(n=612)		
	No.	%
a. Have difficulty in concentrating on what is being read and get to the bottom of the page and find your mind on "other things". ("m" 1969)	424	69
b. Tend to "regress" frequently. (Looking back over what has been read due mainly to loss of meaning. ("l" 1969)	339	55
c. Tend to "sub-vocalise". (Read the words aloud to myself - "internalised speech".) ("k" 1969)	147	24
d. Always read at the same speed. ("j" 1969)	85	14
e. Tend to read only because I am told and do not establish my own purposes for what I am required to read. ("i" 1969)	159	26
f. Do not like reading. ("g" 1969)	34	6
g. Suffer from "verbalism". (Slipping over words and ideas and not understanding them). ("f" 1969)	223	36
h. Have no effective method of reading a Chapter. ("e" 1969)	110	18
i. Do not read enough. ("g" 1969)	178	29
j. Read too slowly. ("d" 1969)	183	30
k. Generally have difficulty in comprehending what is read. ("c" 1969)	95	16

cont'd

20. (17 1969) Factors seen by students as detracting from their ability to read effectively.

		1969/70(n=612)	
		No.	%
l.	Experience difficulty in identifying key ideas and supporting details. ("b" 1969)	157	26
m.	Personal reading vocabulary is not sufficiently extensive. ("a" 1969)	162	26

21. (18 1969) Factors that may have caused students to experience difficulty in doing assigned reading.

		Ranking				
		Most		Expressed as		Least
		Influence		Percentages		Influence
		1	2	3	4	5
a.	Knew that there would be little or no action taken if the reading was not done. ("d" 1969)	25 46	21	17	14 37	23
		100				
		n=565				
b.	Did not really know what you were expected to find out from your reading. ("c" 1969)	20 47	27	28	16 25	9
		100				
		n=581				
c.	Have always found reading textbooks materials difficult. ("e" 1969)	15 30	15	14	23 56	33
		100				
		n=554				
d.	Found the text-book material difficult because of meaning difficulties. ("b" 1969)	18 36	18	18	27 46	19
		100				
		n=567				
e.	Little or no interest in the subject matter. ("g" 1969)	22 44	22	20	19 36	17
		100				
		n=553				

22. (20 1969) Do you think that the College has any responsibility to help improve your ability to read your texts?

a. yes  
b. no

1969/70	
No.	%
430	75
146	25
576	100

19. (1969 Only) How are you usually directed to do any required reading? State what action you take.

Of the 230 students who made a response to this question 82 per cent reported that they were usually directed to their required reading by being given page numbers or chapters of the textbooks to read. These directions were either listed in their course outlines, written on the blackboard or given verbally by the lecturer. The following is a limited but typical sample of students' written responses to this question.

Student A.

"Just given the required reading not instructed in how we should go about reading. At College usually attempted to read but sometimes thru(sic) lack of action taken by lecturers if readings not done do not read well."

Student B.

"Told to read certain chapters for next period. I usually skim read first then re-read main points, underlining them or marking them in some way."

Student C.

"Asked to read chapter. If any indication that we are having test or being questioned upon it I will make time to read it. Usually leave it until the last of my homework as if you don't have time you can quickly read over it next day."

Student D.

"The only time I do required reading is in research for an assignment or if we are told we are to have a short test the next day."

Student E.

"We are asked to read a section for the following lecture, or for assignments. Except for the \_\_\_ Department, not much is done to see if you have fulfilled your requirement thus sometimes, if a topic doesn't interest me I tend to read only a little of the required reading."

Student F.

"Usually we are given cyclostyled sheets with a weekly reading guide listing page numbers or chapters. I do this reading spasmodically rather than regularly. I find that reading for an assignment motivates me best but once started I tend to do much more reading than I need just for the assignment. With textbook reading I find that getting started is usually the only difficulty as I tend usually only to do work that is absolutely necessary but once started I become interested and have actually covered most of the required reading for the year."

(Note: This is not a "typical" comment but is included here because of its particular relevance to this investigation.)

Student G.

"This must be done by next week. Action - Read at last minute or forget."

Student H.

"I usually have a look at it and if it seems interesting I read it but otherwise I forget it - until exam time. I find I forget it anyhow so only have to go and read it again."

Student I.

"Advised to read certain books, but it is not made compulsory - no aims given - page references are rarely given for specific reading. I read the required reading if it is of interest to me, if there are questions to be answered, or if it is necessary for research."

## APPENDIX Q

A SAMPLE OF FAVOURABLE, UNFAVOURABLE AND AMBIVALENT  
OPINIONS EXPRESSED BY STUDENTS CONCERNING THEIR  
ATTITUDES TOWARDS 'DIRECTED READING' AS A METHOD OF  
GUIDING THEIR REQUIRED READING

VERBATIM STUDENT RESPONSES CONCERNING THEIR OPINIONS  
OF DIRECTED READING

Reading Syllabus Study Questionnaire.

Direction: Would you outline in your own words what you think of 'directed reading' (specific questions and directions) as a means of guiding your own textbook reading.

FAVOURABLE

Student Number

001

For a text such as Spache which is very detailed and solid going I feel that it is an ideal method. It enables you to gain important and relevant knowledge from the text without slogging through page upon page of irrelevant jargon.

003

When the reading has been directed in the form of questions and directions I think these aid understanding and I personally remember what I have read more easily when the reading has not been directed.

004

Very good and worthwhile. It establishes purposes and saves a lot of time. It is more effective for effective learning.

009

This sets your objectives for doing the reading and therefore you learn more by having some specific reason for doing it.

010

I think directed reading is a good idea - you know what to do and how to do it. Also I think that had one not had directed reading to do I would not have done as much work. I found the course time consuming to a great extent.

011

I think it is a good idea. I am sure I would not have done all the 'Directed Reading' had I not been directed to do so. Specific questions and directions helped me to understand and find key points in what I read.

012

I will try to use directed reading techniques when reading other textbooks, to eliminate the tendency to try and remember everything - in the end remembering nothing. Directed reading questions gave purpose to my reading.



014

I found it very helpful in the early stages and by the end of the course I felt able to pick out the main points more quickly than earlier.

015

Much better than leaving you to your own devices as that sometimes leaves you 'up in the air'. Helped me understand the text better than if there had been no guide.

018

I found this method extremely valuable as it aided my understanding of the reading process, and gave me purposes for reading the texts.

019

Helped me because it gave a purpose for reading and I covered the material in greater depth.

037

A very good aid to studying chapters and a means whereby success is highly possible (in tests).

038

Makes learning more purposeful and quicker as you have more idea what the important facts are.

039

I consider it helps you a great deal to understand what the passage is about and usually makes you do it because you have a real reason for doing it.

040

I think that directed reading helps you cover a lot of material (and understand it) that you probably would not do on your own especially with a text like Spache.

041

I find it very valuable and the course would not be so successful without this directed reading.

042

Very good - it makes the reading of the text much simpler.

050

It gives you an awful lot of work to do but I feel it is worthwhile as you learn.

055

It sets down a specific purpose for reading. Provides security and is an effective means of getting me to read the text.

063

It's a much better method than just setting a chapter to be read. I find many of the chapters are so involved that unless you have specific aims it is quite often hopeless to sort out the relevant sections because so much of the chapter seems to be quite important.

065

It's a very good idea and encourages you to read.

067

Directed reading helps you to understand the reading and stimulates you to do the reading.

069

Found it extremely useful as it guided me to relevant facts. However, towards the end of the course I found myself looking only for the answers to the questions and disregarding other information.

076

Helps in that you have something concrete to do - not just told to read. Helped to keep mind on subject. Helps organise the reading of a very difficult text. A long method though and very time consuming.

#### UNFAVOURABLE

017

Not particularly helpful. It interferes with personal train of thought on topic.

020

I think it restricts what you are thinking about your reading. It tends to limit you to trying to find only the answers to the questions and because you tend to want to do the directed reading in as little time as possible you only use these questions and forget about everything else in the passage.

022

As far as I am concerned it is frustrating, monotonous and not at all helpful in setting my own purposes for reading.

029

I prefer to read through a chapter and summarise what I think are the main points rather than be directed by what others think are important.

052

Narrows scope of reading.

073

Directed reading is of little use in the summarising of chapters because it makes students look only for the answers to questions.

074

Directed reading is a hindrance in that one only usually looks for answers and misses out other points.

## AMBIVALENT

027

This is a good method, however, if it is too 'directed' one just reads for answers and the sense of discovering is lost.

045

Of benefit to some. Helps in what expected of you in summary. Put off by amount and difficulty of material.

## APPENDIX R

A SAMPLE OF THE COURSE OUTLINE USED FOR THE READING SYLLABUS STUDY INCORPORATING THE INTRODUCTORY 'ADVANCE ORGANISER' AND THE 'DIRECTED READING' FOR CHAPTER NINE OF THE COURSE TEXTBOOK.

## The Content of a Reading Programme for the Middle and Upper Primary School

### Introduction:

The teaching of reading in our middle and upper standard classes (Standards 3 & 4 and Forms 1 & 2), is probably directed mainly at developing the pupils' basic skills in the mechanics of reading; vocabulary, word recognition, and comprehension. The material used for reading instruction appears to consist of a literary type usually, and subject area texts are seldom available or used for this purpose.

There is however, considerable research evidence accumulated to indicate that the study of each subject area in our curriculum requires the use of certain reading skills which are peculiar to study in that particular field although there is considerable overlap among these.

It has also been established that children do not develop these context reading skills and abilities spontaneously or incidentally. To become efficient, effective readers of content materials they require specific instruction in the skills and reading processes particularly applicable to each subject area. Since much of their future education will depend on how well they can read content materials, the development of children's skills and abilities in handling these types of materials obviously becomes quite critical. The introduction to the majority of these skills, and their initial development, is a major responsibility of the middle and upper standard class primary school teacher.

Chapter 9 of Spache and Spache sets out in considerable detail, the range of context reading skills to be taught, the reasons for teaching these, and outlines some of the methods that have been found to be useful in developing pupils' abilities to make efficient use of these crucial reading skills.

### Directed Reading:

SPACHE, Ch. 9

p.274-5. Why do the authors want reading instruction in the intermediate grades to be focussed on the

## SPACHE, Ch. 9 (cont'd)

content field rather than on basal readers?

p.273. Why must a sound basal reader programme precede the content field reading programme?

p.275. Why does Spache propose a "two-way reading programme" for each class segment?

p.275. What would be Spache's reasons for stating that: "We cannot conceive of effective content skill teaching being conducted with a single piece of reading matter being used for all pupils regardless of their abilities"?

p.276. Why does the author favour the introduction of content reading with pupils at the Std. 3-4 level. (Grade 4)?

p.277. Why do pupils need careful training in the use of a text book?

p.274-77. Why are basal readers held to be inadequate for the purposes of teaching skills of reading in the content field?

p.277-8. Why are the items mentioned on p.278 important elements in preview reading?

p.279. Why should material be previewed?

p.279. What advantages accrue to a person who is competent at previewing reading material?

p.279. How may a teacher set about teaching the skill of previewing and also establish its value in the eyes of the pupils?

p.280. Why should previewing skills be deliberately taught to pupils?

p.280. How may a teacher deliberately go about the task of ensuring that his pupils practise effective previewing techniques?

p.281. In what ways does skimming material benefit the reader?

p.281. What is the difference between skimming, scanning and previewing?  
Which of these skills did you use in finding the answer to the above question?

p.281. Justify the author's referral to "timed reading tasks" and "time limits" when pupils are practising the skills of skimming and scanning.

## SPACHE, Ch. 9 (cont'd)

p.282. Outline the way in which a teacher may go about introducing skimming to his class.

p.282. Why must the skills of skimming and scanning be gradually introduced?

p.282-3. How would you define a "flexible reader"?

One of the goals of a sound middle school reading programme is to develop flexible readers. Why is so much emphasis placed upon flexibility in this section of the book?

p.283. In what ways do you consider Wagner's study of children's map reading skills, useful to a class teacher?

p.284-9. Study these skills listed here and state how many of these, you as a pupil, received instruction in.

p.289. Explain why the reading of charts and tables is basically a scanning behaviour.

p.290. Why should all pupils receive training in effective use of the library?

p.291. How may a teacher set about fostering the development and growth of library skills in his pupils?

p.291. Why should library and reference skills be taught in a practical manner?

p.292. Why are 'Organising and Reporting Skills' related to the teaching of reading?

p.293. In what ways will the various types of notetaking activities, and the purpose of the notetaker, affect the type of reading activity?

p.294. Why does the author make this observation on vocabulary in connection with reading in the content field?

p.294. Why is this statement justified in view of statements made elsewhere that pre-teaching of vocabulary is an unsatisfactory practice?

p.295. Compare this 'General Plan for Content Area Study', with the general lesson plan of p.265. What differences do you notice? Why have changes been made?

## SPACHE, Ch. 9 (cont'd)

p.295. Note Six. This is reinforcement of previously acquired skills. Why is it such an important section of the plan?

p.296. Using the section "Reading in Literature" pp.307-309 of this text, outline the parts you noted in your preview; the questions you posed for answering; the summary you prepared. Also state what steps you took to test yourself.

p.297. Why should the skills of previewing, scanning and skimming be taught before the pupil is asked to read in the content fields of Science and Social Science etc?

p.305. Why does it become necessary to teach older children specific arithmetic reading skills?

p.307. What is the reason for the author suggesting the making of diagrams and sketches as part of the arithmetic reading activity?

p.309. Is 'Critical Reading' a simple reading skill involving chiefly a special type of comprehension skill? Give reasons for your answer.

p.311. In 'Critical Reading' in particular, the author basis his argument that young pupils can be taught this reading skill, on the fact that the teacher can stimulate them to make simple judgements regarding a story. What are these judgements? In order to get children to think, discuss and make such judgements, what preparation would it be necessary for the teacher to carry out?

p.311-2. Miss Hill's approach to this reading skill is very calculated and methodical. Do you think this method is too detailed for a classroom teacher to follow? What basic ideas of reading is she seeking to have her pupils apply in a practical fashion?



## APPENDIX S

SUMMARY OF MEANS AND STANDARD DEVIATIONS OF PREDICTOR  
VARIABLES FOR ALL TREATMENT GROUPS:AL AND AQ, READING  
ACHIEVEMENT, AND COLLEGE ACHIEVEMENT.

SUMMARY OF MEANS AND STANDARD DEVIATIONS OF PREDICTOR VARIABLES FOR ALL  
TREATMENT GROUPS: AL AND AQ, READING ACHIEVEMENT, AND COLLEGE ACHIEVEMENT

TREATMENT GROUPS	AL (IQ)*		AQ (IQ)*		READING**		COLLEGE***	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
FIRST YEAR STUDENTS								
Post Factual	17.74	3.69	12.14	4.20	57.62	5.49	9.33	3.97
Pre Factual	16.43	3.75	12.04	4.10	55.73	6.04	8.56	3.37
Read Carefully	14.76	3.86	9.92	4.42	54.84	5.86	10.34	3.23
Post Reasoning	13.00	3.97	8.19	4.24	55.38	5.51	10.84	3.19
Pre Reasoning	15.08	3.78	10.00	3.34	55.65	5.50	10.26	2.78
Read Carefully	13.34	4.08	9.38	3.81	53.88	7.45	9.07	2.84
SECOND YEAR STUDENTS								
Post Factual	13.82	4.37	8.82	3.79	55.56	5.53	10.21	3.02
Pre Factual	13.88	4.23	10.29	3.91	53.96	5.87	9.11	4.08
Read Carefully	14.16	3.49	8.54	3.31	55.29	5.37	9.33	3.37
THIRD YEAR STUDENTS								
Post Factual	15.78	4.98	10.86	5.06	57.54	5.37	10.16	3.66
Pre Factual	15.41	4.08	9.73	3.62	55.51	5.91	10.02	3.27
Read Carefully	15.61	3.91	10.80	4.68	54.16	5.38	9.88	3.25

\* Raw scores.

\*\* Scaled scores (Combined Vocabulary, Speed of Reading and Comprehension scores)

\*\*\* Combined stanines for two year-long courses (Education and English).

## APPENDIX T

CORRELATIONS FOR THE EXPERIMENTAL GROUPS BETWEEN THE PREDICTOR VARIABLE OF TEACHERS' COLLEGE ACHIEVEMENT (IN EDUCATION AND ENGLISH) AND STUDENT ACHIEVEMENT ON THE PREDICTOR VARIABLES OF AL, AQ AND READING ACHIEVEMENT AND THE EXPERIMENTAL POST TESTS, THEIR TOTAL, AND THE TIME TAKEN FOR THE EXPERIMENTAL READING TASK.

CORRELATIONS FOR THE EXPERIMENTAL GROUPS BETWEEN THE PREDICTOR VARIABLES OF  
TEACHERS' COLLEGE ACHIEVEMENT (IN EDUCATION AND ENGLISH) AND STUDENT ACHIEVEMENT  
ON THE PREDICTOR VARIABLES OF INTELLIGENCE (AL, AQ) AND READING ACHIEVEMENT, AND  
THE EXPERIMENTAL POST TESTS, THEIR TOTAL, AND THE TIME TAKEN FOR THE EXPERIMENTAL  
READING TASK

Experimental Groups*	AL	AQ	Reading Achievement	Time Taken	First Post Test	Second Post Test	Third Post Test	Total Post Test
Post Factual	.32	.14	.03	.34	.45	.05	.51	.56
Pre Factual	.24	.04	.17	.15	.57	.42	.41	.54
Read Carefully	.28	.29	.32	.18	.30	.31	.60	.62
Post Reasoning	.28	.48	.12	.21	.47	.14	.33	.39
Pre Reasoning	.23	.19	.14	.02	.04	.09	.20	.15
Read Carefully	.43	.26	.12	.39	.47	.26	.10	.20

\* Refer Figure 1.0.

## APPENDIX U

AN ANALYSIS OF THE PERFORMANCE OF THREE HUNDRED  
AND SIXTY TEACHERS' COLLEGE STUDENTS ON THE  
VOCABULARY TEST OF THE CO-OPERATIVE READING  
COMPREHENSION TEST, FORM Y.

AN ANALYSIS OF THE PERFORMANCE OF THREE HUNDRED  
AND SIXTY TEACHERS' COLLEGE STUDENTS ON THE VOCABULARY  
TEST OF THE CO-OPERATIVE READING COMPREHENSION TEST,  
FORM Y.

No. of the Word in the test form.	The Test word	Percentage of students who KNEW the mean- ing of the word.	Number of students who DID NOT know the meaning of the word. (n=360*)
1.	carol	93	26
2.	toxin	95	17
3.	alteration	97	12
4.	competition	94	21
5.	fling	99	5
6.	symptom	96	15
7.	verify	97	11
8.	partition	97	12
9.	tolerate	100	1
10.	annul	84	57
11.	preposterous	92	27
12.	retard	93	25
13.	molest	87	45
14.	sever	83	60
15.	garland	89	41
16.	chronicle	76	88
17.	savoury	81	68
18.	adept	78	106
19.	humane	81	80
20.	imaginary	60	69
21.	filch	56	143
22.	lore	56	158
23.	maze	66	158
24.	concord	74	123
25.	civility	74	93
26.	supple	91	33
27.	lethargy	57	156
28.	valid	88	42
29.	comely	46	196
30.	refute	72	100
31.	wield	34	238
32.	jeopardy	79	77
33.	adorn	52	171
34.	turbulent	67	120
35.	frivolous	65	126

cont'd

No. of the word in the test form.	The Test word	Percentage of students who KNEW the mean- ing of the word.	Number of students who DID NOT know the meaning of the word. (n=360*)
36.	allege	31	247
37.	hypocrisy	66	124
38.	gibe	62	137
39.	dearth	39	220
40.	gaudy	78	78
41.	concur	50	179
42.	edifice	45	198
43.	rational	71	104 (358)
44.	sinuous	34	235 (358)
45.	cleavage	42	208 (357)
46.	undue	35	231 (355)
47.	candour	44	198 (352)
48.	cacophony	37	221 (350)
49.	sultry	56	151 (349)
50.	pallet	22	268 (343)
51.	wroth	53	160 (339)
52.	evince	13	294 (338)
53.	cosmos	55	150 (335)
54.	censure	18	267 (326)
55.	laconic	14	281 (325)
56.	incursion	27	233 (321)
57.	recant	42	184 (316)
58.	choreography	77	73 (314)
59.	indigenous	76	74 (314)
60.	divagation	16	264 (314)

\* From word No.43 onwards an increasing number of students did not complete the test because of the time factor. The number of students who attempted to answer the final questions are recorded in brackets adjacent to the numbers of students not knowing the word. Percentages have been calculated using these numbers.

## APPENDIX V

SUMMARY OF MEANS AND STANDARD DEVIATIONS OF THE  
THREE RATERS FOR THE SECOND POST TEST (ESSAY  
TYPE) RAW SCORES FOR EACH EXPERIMENTAL GROUP.



SUMMARY OF MEANS AND STANDARD DEVIATIONS OF THE THREE RATERS FOR  
THE SECOND POST TEST (ESSAY TYPE) RAW SCORES FOR EACH EXPERIMENTAL GROUP

	Rater One		Rater Two		Rater Three	
Experimental Groups*	Mean	SD	Mean	SD	Mean	SD
Post Factual	17.03	7.80	16.19	7.17	13.07	5.18
Pre Factual	15.34	5.88	13.34	6.13	12.13	5.39
Read Carefully	13.96	7.40	11.73	6.37	10.65	5.44
Post Reasoning	16.69	7.40	14.61	5.67	13.53	5.69
Pre Reasoning	20.08	6.23	17.65	5.61	16.56	4.87
Read Carefully	13.30	7.26	10.07	5.36	11.40	4.70

\* Refer Figure 1.0.